Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

An Investigation of Oracy and Graphicacy Knowledge and Skills Development, in a Selected Post-Primary Initial Teacher Education Programme in the Field of Technical Education

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A thesis submitted in fulfilment of the requirements for the Master of Education under Approved Programmes in Education in the Atlantic Technological University

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DECLARATION OF ORIGINALITY

I declare that the material, which is submitted in this thesis towards the partial fulfilment of the requirements for the Master of Education, is entirely my own work and that all the sources have been acknowledged. This material has not been submitted for any other academic assessment other than the partial fulfilment of the above work.

Signature:

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Date: 31.03.2023

ABSTRACT

Prior to 2011, Ireland's performance in the Programme for International Student Assessment (PISA) was unsatisfactory. To improve these results, the Department of Education and Skills successfully implemented a strategic literacy and numeracy framework. Literature presents literacy as overarching categories, with sub-sets such as oracy and graphicacy although little has been published on oracy and graphicacy skills development in initial teacher education. This study seeks to redress this imbalance by investigating these skills in the technical subject area, in the context of an Irish initial teacher education case study, the output of which is a workshop series on oracy and graphicacy. Data gathering methods include questionnaires, a focus group, and two interviews. A thematic analysis of the data, cross referencing the data sources and the analysis of official programme documents was conducted to evaluate the programmes approach to oracy and graphicacy development. A finding from the examination of the programme modules showed that pre-service teachers were more likely to recognize oracy and graphicacy in the module when they were explicitly named in their module descriptors. Two recommendations from this study are: 1) to integrate explicit oracy and graphicacy strategies into the teaching, learning and assessment design plan for all module descriptors on the case study programme, and 2) to implement an oracy and graphicacy training workshop in the academic year 2023-2024, with the intention of enhancing oracy and graphicacy skill development and practice, as informed by this research. This study is a single bounded case study, but its methodology can be replicated across other teacher education programmes and adapted for different ITE contexts. It provides an original contribution to the effective promotion of oracy and graphicacy skills development in the context of post primary technical education.

KEYWORDS: *Oracy, Graphicacy, Technical Education, Initial Teacher Education, Case Study.*

DEDICATION

This thesis is dedicated to my supervisors at the Atlantic Technological University (ATU), Ireland, under whose continual guidance I was able to complete my thesis. They not only provided me with academic knowledge, but also offered me wise advice at key moments throughout my journey. This paper is also dedicated to my family for motivating and encouraging me from start to finish.

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I wish to express my appreciation to all the research participants (pre-service teachers, lecturing staff, and managers) from the *BSc (Honours) in Education (Design, Graphics and Construction)* degree programme at ATU, Ireland: without your participation and willingness, this study wouldn’t have been possible.

Finally, I would like to express my gratitude to my family, especially my parents Anne Marie and Anthony, my siblings Niamh and Darragh, and my partner Roy, for their understanding, patience, love, and support during my journey.

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ABBREVIATIONS

ACRL	Association of College and Research Libraries
ATU	Atlantic Technological University
BSc in Ed	Bachelor of Science in Education
CA	Continuous Assessment
CL	Collaborative Learning
CPD	Continuous Professional Development
CS	Construction Studies
DCG	Design, Communication and Graphics
DCU	Dublin City University
DES	Department of Education and Skills
EEF	Education Endowment Foundation
G	Graphics
GMIT	Galway-Mayo Institute of Technology
HOD	Head of Department
IT	Initial Teacher
ITE	Initial Teacher Education
L	Lecturer
LC	Leaving Certificate
M	Manager
MD	Module Descriptors
MS	Microsoft
MTW	Materials Technology (Wood)
OECD	The Organisation for Economic Co-operation and Development
OL	Oral Literacy
PC	Programme Chair
PDST	Professional Development Service for Teachers

PISA	Programme for International Student Assessment
PS	Pre-service
RCSLT	Royal College of Speech and Language Therapists
SA	Spatial Ability
SIR	Subject Inspection Reports
TAMK	Tampere University of Applied Sciences
TC	Teaching Council
TE	Teacher Education
TG	Technical Graphics
TLA	Teaching Learning and Assessment
TUS	Technological University of the Shannon
UK	United Kingdom
UL	University of Limerick
VL	Visual Literacy
ViL	Visual Language
WCRIF	World Conferences on Research Integrity Foundation
WSER	Whole School Reports
WT	Wood Technology

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Chapter One. General Introduction

1.1 Context

Following Ireland’s poor ratings in the Programme for International Student Assessment (PISA) scores pre-2011, the Department of Education and Skills (DES) published its strategic framework document entitled *Literacy and Numeracy for Learning and Life* (DES, 2011). This has led to advances in the fields of literacy and numeracy in educational settings in Ireland, with correspondingly enhanced PISA scores (DES, 2017). Ireland's PISA literacy and numeracy results in 2009 were the lowest recorded between 2000 and 2018. Since 2011, Ireland's literacy levels have increased from 496 in 2009 to 523 in 2012, 521 in 2015, and 518 in 2018. Ireland's numeracy scores followed a similar u-shaped trajectory, rising from 487 in 2009 to 501 in 2012, 504 in 2015, and 500 in 2018, indicating an improvement from pre-2011 levels (OECD, 2019). Ireland’s trend of PISA results indicates how interventions such as the implementation of the *Literacy and Numeracy for Learning and Life* strategic framework can have a positive impact in specific areas.

Literacy and numeracy are classified as overarching categories, with several inter-related sub-sets, some of which have received lesser attention, not least, oracy and graphicacy. The development of oracy and graphicacy skills is a significance aspect of teaching and learning in post primary technical education, hence an integral part of Initial Teacher Education (ITE). Little has been published on oracy and graphicacy in second level or third level education in Ireland in the field of technical education to date. In cases where research is more prevalent it tends to focus on specific aspects of the overall category for example the literature on graphicacy tends to focus on the specific areas of spatial ability and problem solving in isolation rather than representing their place in a wider framework. This present study seeks to redress this imbalance by investigating oracy and graphicacy skills development in the technical subject area, in the context of ITE. By means of a case study analysis of one selected Irish ITE programme, this research hopes to contribute to the effective promotion of oracy and graphicacy skills development in the context of post primary technical ITE.

While the terminology of oracy and graphicacy, and various literature understandings and definitions of same, are specifically addressed in detail in chapter two, for the purpose of this introduction, oracy can be simply understood as 'the ability to interact and engage with others through active listening and fluent effective speech, including the use of body language, facial expressions, and hand gestures', and graphicacy may be understood as 'the ability to use, create, and mentally manipulate maps, images, diagrams, and other forms of visual and spatial documents as tools to communicate spatial information'.

This research incorporates a case study of one Irish ITE technical education undergraduate programme, namely the *BSc (Honours) in Education (Design, Graphics and Construction)* teacher education degree programme, in Atlantic Technological University (ATU), Ireland.[1] This is a four-year concurrent undergraduate programme that prepares technical teachers to teach the subject Graphics and Wood Technology at junior level and Design and Communication Graphics and Construction Studies, at senior level.[2] The programme is characterised by specialist subject specialist training, small groups sizes, innovative teaching techniques, design-led teaching and learning, advanced technological training, and scaffolded school placement experiences (Atlantic Technological University, 2022). Strategic approaches to literacy, numeracy, oracy and graphicacy on school placement modules are explicitly recognised as curriculum and assessment requirements on the programme. A programme analysis of literacy and numeracy skills development on

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[1] It is to be noted that, at the commencement of this research project, the case study institute was designated as the Galway-Mayo Institute of Technology (GMIT). The institute was re-designated as the Atlantic Technological Institute (ATU) on 01/04/2022: ATU will therefore be the pre-dominant reference used in this thesis. Reference to GMIT is retained in relation to data gathering tools distributed prior to re-designation and to prior publications by the Institute, of relevance to this study.

[2] Details of this case study ITE programme are available at Bachelor of Science (Honours) in Education (Design, Graphics and Construction) | ATU - Atlantic Technological University (gmit.ie).

this programme had previously been conducted, by O’Regan (2021). However, no corresponding analysis of the effectiveness of oracy and graphicacy skills development on this programme has been conducted to date- hence this study addresses a gap in knowledge and can potentially be of practical benefit to the programme in its future development, as well as other ITE programmes. This study wishes to follow the investigative approach of O’Regan (2021) and to subsequently develop a response in relation to oracy and graphicacy knowledge and skills enhancement in the selected ITE programme in the field of technical education.

It is imperative to delineate the researcher's background and context prior to delving into the aims and objectives of this study (Section 1.2). At the commencement of this research endeavour, the researcher held the status of a recent graduate from the ITE programme at ATU, as she graduated from the programme in 2020. Consequently, it is noteworthy that the researcher possesses a nuanced familiarity with both the university and the ITE programme, having previously served as a PS teacher within this programme.

1.2 Aims & Objectives

This research aims to investigate oracy and graphicacy knowledge and skills development in a selected post-primary initial teacher education programme in the field of technical education, with a view to enhancing both skills. The selected programme is the B. Sc (Honours) in Education (Design, Graphics and Construction) degree programme, in the Department of Creative Education, Atlantic Technological University, Ireland.

The main objectives of this study are to:

1. Clarify oracy and graphicacy terminology, with reference to literature.
2. Conduct a literature analysis study of oracy and graphicacy, in the context of initial teacher education, and subject delivery at post primary level, with particular emphasis on technical education.
3. Conduct a documentary analysis study of whole school evaluation reports and subject inspection reports pertaining to technical education, published by the DES, since the launch of the literacy and numeracy framework (2011).
4. Conduct a documentary analysis of the ITE case study programme module descriptors, in order to determine the status of both oracy and graphicacy consideration.
5. Conduct a primary case study within one technical TE programme, in order to critically assess current levels of oracy and graphicacy knowledge and skills.
6. To develop a response or research output in relation to the study's findings pertaining to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education.

1.3 Research Methodology

This research resides in the field of social science and the research methodology employed is aligned with social science research in education. Social sciences are concerned with discovering universal and natural laws determining both individual and social behaviour (Cohen, Manion, & Morrison, 2007). They can be classified into various scholarly disciplines, such as, psychology, sociology and economics (Bhattacherjee, 2012). Moreover, they accommodate a variety of research paradigms, frameworks and models. Two philosophical paradigms underpinning this research are constructivism and interpretivism: both meaning-orientated methodologies (see Chapter Three). In these paradigms reality can be seen as multi-layered or complex, meaning one circumstance or event can have multiple understandings: these understandings or interpretations can differ due to individual's experiences and knowledge of the world (Dickson Adom, 2016). Due to the complexity of social science research, including personal interpretations, an attempt to approach data collection and analysis from more than one perspective can be helpful. A mixed methods research approach is commonly used to collect and analyse social science data. The term 'mixed methods' comes from the emergence of two methods, and, for the purpose of this research, the methods used are both quantitative and qualitative. It is argued that a mixed methods research approach can be used to contribute to a more valid inference for a complex human study by employing strategies from more than one method (Lund, 2012).

This research uses a case study framework or model. The case in question is the ATU Department of Creative Education undergraduate *Bachelor of Science (Honours) in Education (Design Graphics and Construction)* programme, Ireland. The case study critiques current oracy and graphicacy practices and identifies best practice oracy and graphicacy skills development for the case study ITE programme.

With respect to research participant sampling, a strategy of purposeful sampling, is used in this study in a manner aligned with literature (Paton, 2005) (see Section 3.3.1).

Purposeful sampling is a method of identifying and selecting rich data commonly used in qualitative research (Palinkas, et al., 2016). One data gathering tool – the student questionnaire – gathers statistical data by means of closed, choice or scaled questions, but the questionnaire also incorporates qualitative data by means of explanatory dialogue boxes that allowed students to share their subjective experiences and opinions (see Appendix 3).

Both a literature analysis and a documentary analyses of official programme documents is conducted, and triangulation is applied to the primary research data gathering, for the purpose of cross-checking and deepening the analysis interpretations. Data gathering methods (see Section 3.3) include:

1. One mixed methods student questionnaire with pre-service (PS) teachers at the selected institute.

2. One focus group in the form of a dialogical circle reflection with six lecturers on the ITE programme, including research supervisors, lecturers in the field of TE, and School Placement tutors.

3. Two semi-structured interviews with programme managers.

1.4 Scope & Limitations

The scope of this case study research includes an examination of both oracy and graphicacy development skills in ITE in the field of technical education. From a literature analysis perspective, the study explores key terminology, clarifies key concepts (using both seminal and current scholarly texts), and seeks to identify literature models and frameworks pertaining to oracy and graphicacy, and their inter-relationship. This literature study further examines oracy and graphicacy skills development in the context of post primary education and PS teacher training, in the field of technical education. A mixed method case study of one technical education teacher ITE programme is conducted, based on constructivist and interpretivist paradigms. Data is analysed by means of descriptive statistics (quantitative data) and thematic analysis (qualitative data). The study follows O'Regan's (2021) investigative approach to develop a response in relation to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education. This is an original contribution, that addresses a gap in the literature with identifiable benefits for the case study programme.

With respect to the scope of the research, it is helpful to clarify, that in the Irish context, there are two models of post primary teacher education. One model is the four-year 'concurrent' training model, where subject specialist training and pedagogical training run in parallel with each other and are integrated. The second is the 'consecutive' training model, which involves completing a primary degree initially and following on with a two-year *Professional Master of Education* (PME) programme. The subject specialist and teacher education training experiences are not integrated, and the process takes five to six years to complete.

The case study programme in this research study is a four-year concurrent degree programme. Because the concurrent model teaches both subject material in conjunction with educational practices, it follows that there is more scope for educational pedagogies relating to oracy and graphicacy skills development to be integrated throughout the course. In contrast, students selecting a consecutive model of teacher training come from a wide variety of subject specialisms- not specific subject areas- and therefore the focus tends to be on a more general pedagogy, not necessarily including detailed training relating to the specifics of specific sub-sets of post primary teaching skills, such as oracy and graphicacy skills. Zuzovsky and Donitsa-Schmidt (2015) reviewed the advantages and disadvantages of both consecutive and concurrent ITE approaches. They stated that the consecutive model is less integrated in terms of discipline and pedagogy due to a lack of time for socialization into the teaching profession, whereas the concurrent model is better integrated with more learning experiences but requires an early career decision from less mature people (Zuzovsky & Donitsa-Schmidt, 2015).

As discussed later (section 3.2.2) a limitation of this study is the fact that it is a bounded case study, hence cannot be generalised to wider ITE programmes. Its methodology, however, can be replicated, and comparisons made, in future studies. A second limitation of this study is its relatively narrow reach. This research focuses on one of the ATU's Department of Creative Education ITE programmes and ATU is but one of four technical teacher education higher education institutes in Ireland, the others being the University of Limerick (UL), the Technological University of the Shannon (TUS) and Dublin City University (DCU).[3] UL and TUS in partnership with DCU similarly offer a concurrent teacher education programme. No comparison is made with these wider institutes. Internationally, there is minimal uniformity in the teaching of technological disciplines. There may not be any direct international counterparts for the Irish subjects of DCG and CS. However, many of the study's findings may be applicable to other subjects or to other teacher-training programmes, despite the fact that there aren't many institutions offering concurrent programmes for these particular courses. However, this may necessitate additional research.

1.5 Thesis Structure

This thesis consists of nine chapters. Chapter one gives the reader background and context of the research; this is where the reader gets introduced to the aims and objectives of the research. The methodologies and research methods are outlined followed by the research scope and limitations.

[3] See UL and TUS/DCU joint undergraduate STEM technical education concurrent programmes: Bachelor of Technology (Education) in Materials and Architectural Technology | University of Limerick (ul.ie) , Bachelor of Education in Technology, Engineering and Graphics - (Post-Primary) (dcu.ie)

Chapter two comprises of the literature analysis introduction and methodology, along with the clarification of the terms, oracy and graphicacy, relating directly to objective one of this research. The development of oracy and graphicacy in ITE in Ireland is discussed in this chapter, along with pre-developed frameworks relating to both oracy and graphicacy. Overall giving the reader knowledge of where Ireland stands in terms of oracy and graphicacy in ITE in the field of technical education.

Chapter three discusses the research methodology and data gathering methods which have been utilised in the study. An analysis of paradigms identified that the interpretivist paradigm was the suitable lens for this research. Mixed methods data approach has been used for the benefit of both qualitative and quantitative data. Student questionnaires have been chosen to gather quantitative data with some text boxes to allow for the opportunity of qualitative data emergence. An online focus group with lecturers on the ITE programme has been chosen to discuss findings from the student questionnaires. Online interviews with the head of department (HOD) and the programme chair (PC) have been used to explore findings from both students and lecturers on the programme. Following approval from ATU (formerly GMIT), a pilot study questionnaire was carried out and the process has been explained in this chapter.

Chapter three discusses and justifies the methodological choices made in this research study, with reference to literature. Objective four of the research study (outlined in section 1.2) is addressed. This section provides the reader with an account of the research methodology, research methods, and data gathering tools employed in the study. Research philosophies which underpin social science research are clarified and four philosophies are identified as most relevant to the study: positivism, interpretivism, the critical paradigm and pragmatism. A mixed methods research approach has been employed for this study, focusing on predominantly qualitative data with some profiling quantitative elements. This chapter provides a detailed account of the data collection process, including decisions which were made when selecting participants, data gathering tools and practices, and the validity and reliability of the study.

Chapter four continues to address objective four of the research study (see Section 1.2). The chapter explores and presents the quantitative and qualitative findings. An initial analysis of the primary research data relating to the PS students' questionnaires, across years one to four of the case study programme are included in this chapter. The questionnaires were designed with a mixed-methods study in mind (section 3.3.2) and sought to generate both quantitative and qualitative data relating to PS teachers' understandings of, and practice of, oracy and graphicacy skills development and practice. With that in mind, both quantitative and qualitative results from the questionnaire are presented in this chapter.

Following on from the previous chapter, chapter five continues to address objective four of this research study. The research findings and analysis of the qualitative data from the lecturer focus group and interviews with management are discussed in this chapter. The analysis narrative is organised according to the five dominant themes generated from the inductive thematic analysis process (section 3.6). These themes are *oracy and graphicacy terminology, teaching, learning and assessment strategies, benefits for PS teachers, and barriers to oracy and graphicacy.*

Chapter six addresses objective four by discussing the key findings and engaging in a conversation with the literature. The research results from the PS teacher questionnaires, the lecturer focus group, and the management interviews were presented in the previous chapters four and five, together with an analysis of the findings. This chapter is structured using the same themes listed in chapter five. Each section is organized with the inclusion of literature findings (see Chapter Two), followed by research findings and analysis (see Chapters Three, Four, and Five), as well as new and pertinent material that is incorporated throughout. Lastly, this chapter's discussion will contribute to the development of a research response, namely an oracy and graphicacy training workshop explicitly tailored for the case study programme that aims to enhance oracy and graphicacy skills and knowledge development and practice.

Chapter seven addresses objective six of this research, namely, to develop a response to, or research output, in relation to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education. Subsequent to, and in light of, the investigation, the response was framed as a research output training workshop designed to enhance knowledge and skills in an ITE context. These training workshops were largely modelled on, and build upon, O'Regan's (2021) series of literacy and numeracy training workshops. The chapter discusses the rationale for the training workshops as well as their design, content, pedagogy, and structure. Finally, the chapter showcases the proposed oracy and graphicacy workshops.

Chapter eight provides the primary conclusions and recommendations derived from this research study, which comprises of the study's significant findings organized according to the research objectives. The contribution to knowledge, study strengths and limitations, concluded with the research recommendations.

Chapter nine concludes this research study with a list of the research bibliography.

Chapter Two. A Literature Analysis

2.1 Introduction

The aim of this chapter is to critically analyse the literature and to use this existing knowledge as a foundation to develop and inform the research aim, which is to investigate oracy and graphicacy knowledge and skills development in a selected post-primary initial teacher education programme, in the field of technical education. This chapter will address objectives one, two and three of the study. Objective one is to clarify oracy and graphicacy terminology, with reference to literature. Objective two is to conduct a literature analysis study of oracy and graphicacy, in the context of initial teacher education, and subject delivery at post primary level, with particular emphasis on technical education. Objective three is to conduct a documentary analysis study of whole school evaluation reports (WSER) and subject inspection reports (SIR) pertaining to technical education, published by the DES, since the launch of the literacy and numeracy framework (2011).

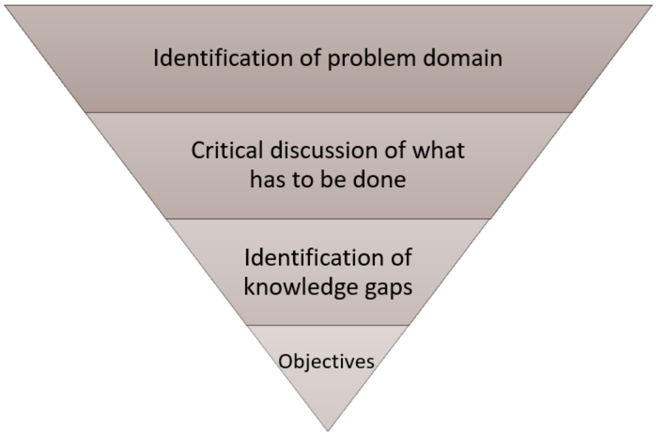
The following section will outline the literature analysis methodology which was used to conduct the literature analysis of this research, including the rationale for the choices made (section 2.2). Section 2.3 explores definitions of both oracy and graphicacy and clarifies terminology with reference to literature which addresses objective one of this study (see Section 1.2). This section develops a suitable definition for oracy and graphicacy for this study, which is to be used by the reader throughout the research paper. Section 2.4 explores the literature analysis of oracy and graphicacy in the context ITE and subject delivery at post-primary level, focusing on technical education. Section 2.5 includes both a documentary analysis of DES whole school evaluation reports (WSER) and subject inspection reports (SIR) pertaining to technical education, and a documentary analysis of the case study programme’s module descriptors (MD) for the implementation of oracy and graphicacy are included in this section. Both sections 2.4 and 2.5 provide context for this research study as they look at oracy and graphicacy through the lens of technical education in ITE, and post-primary school. Section 2.6 explores frameworks pertaining to oracy and graphicacy. The oracy frameworks explored include Voice 21's The Oracy Framework, PDST's Five Components of Effective Oral Language Instruction, and John Munro's The ICPALER Framework. Graphicacy frameworks explored include P. Wilmot's Framework for Thinking About Graphicacy as a Form of Communication, the Theory of Visual Literacy by Avgerinou, and Pettersson (2010), and The Framework for Visual Literacy in Higher Education, by ACRL (2011). Lastly section 2.7 concludes this chapter. First, the literature analysis methodology will be explored.

2.2 Literature Analysis Methodology

According to Webster and Watson (2002), literature analysis is an essential step of an academic research study, and a thorough analysis creates a solid basis for building on prior knowledge as it facilitates the closing and opening of areas where research exists and is needed. Put differently by Denney and Tewksbury (2012), "[t]he [literature] overview both shows the reader what is known about a topic, and what is not yet known, thereby setting up the rationale or need for a new investigation" (Denney & Tewksbury, 2012). A combination of two literature analysis methodologies have been utilised in this study, Maier's (2013) Conceptual "Inverted Pyramid" Model of Steps in the Writing of the Literature Review (Figure 2.1), and Sheraton and Gaeta's (2021) steps to conducting a literature review (Figure 2.2). Maier's model of writing a literature review proposes a four-step process, including 1) identification of problem domain, 2) critical discussion of what must be done, 3) identification of knowledge gaps, and 4) objectives (Maier, 2013).

Figure 2.1

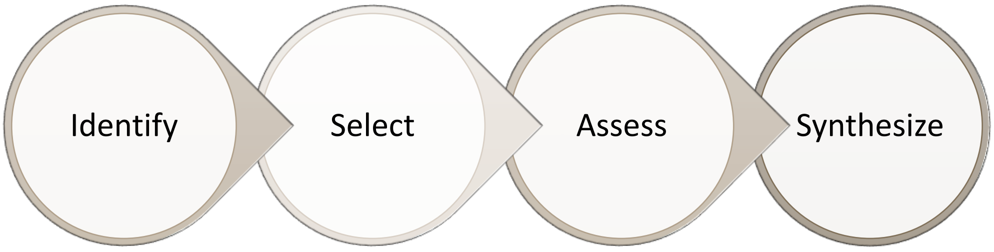
Conceptual "Inverted Pyramid" Model of Literature Review (Adapted from Maier (2013))



With some similar and contrasting elements to Maier’s model, Sheraton and Gaeta also created a four-step method to conduct a literature review. These steps include: 1) Identify, 2) Select, 3) Assess, and 4) Synthesize (see Figure 2.2).

Figure 2.2

Steps to Conducting a Literature Review (adapted from Sheraton and Gaeta (2021)*)*



To solve a problem, the identification of the problem domain by the researcher is necessary. The starting point for this study, therefore, was to analyse and evaluate the current position of oracy and graphicacy in education internationally, initially, and then particularly in the Irish educational context. The literature analysis was initiated by conducting a three-step process which involved article identification, selection, and assessment. Relevant and reliable scholarly articles in the areas of oracy and graphicacy, particularly in the context of ITE, had to be identified and selected.

Step one in this process involved gathering academic sources, in particular peer reviewed journal articles pertaining to oracy and graphicacy, that addressed both the question of terminology and oracy and graphicacy in formal educational contexts. Academic training on advanced library research skills was pursued in the form of an ATU accredited Level 9 CPD module: Research Cycle Foundation. Using these skills, a robust and advanced library search was conducted electronically using a number of reliable and reputable databases, such as ScienceDirect, IEEE Xplore, Academic Search Premier (EBSCO), ERIC, and Google Scholar. These databases include top ranked journals and articles in social sciences in the field of education, such as IES, AISHE, and the Irish Journal of Education. GMIT's online library (now renamed ATU's online library) was also an important resource during this phase. Research@THEA which is "an open access repository established in 2017 containing research from all the Institutes of Technology" (Research@THEA, 2002-2016), was used to search all institutes of technologies' collections by means of one search as opposed to searching each Institutes' individual site.

The following were the procedures involved in searching for academic publications and journals related to the area of study while utilizing ATU's online library. The search engine offers a "Search + Find" tab on the landing page of the website, under this you can find the "Advanced Search" option. The advanced search feature allows the researcher to filter the search using many different settings. The "search modes" was set to "Booleann/ Phrase", no limits were selected, discovering only what was available in the Library

Collection. According to Hollier (2020), Boolean has three main operators, 'AND', 'OR', and 'NOT', which are key to more precise and relevant literature search results, generating a "satisfactory searching experience" (Hollier, 2020). Key words like "Oracy", "Graphicacy", "Technical Education", "Visual Literacy", "Spatial Ability", "Graphical Literacy" and "Oral Literacy" were used to find key literature. To reveal more specific literature, the terms, and phrases "Oracy" AND "Technical Education", "Oral literacy" AND "Technical Education", "Graphicacy" AND "Technical Education" and "Graphical literacy" AND "Technical Education" were entered into the search engine to expose literature more suitable to the research. To further delve into the literature, the final searches included the operator AND "Teacher Education".

After exploring various databases to suit this research topic, relevant journals in social sciences in the subject category of education were assessed. The top 10 journals in social sciences and subject category of education were ranked by Google Scholar and Resurchify in Table 2.1.

Table 2.1

Top 10 Ranked Publications in Social Sciences in Education (Adapted from Google Scholar (2023); Resurchify (2022))

Top 10 Publications in Social Sciences in Education		
	Google Scholar	Resurchify
1.	Teaching and Teacher Education	Review of Educational Research
2.	Studies in Higher Education	Internet and Higher Education
3.	British Journal of Educational Technology	Computers and Education
4.	Education and Information Technologies	Developmental Review
5.	Higher Education	Educational Researcher
6.	Review of Educational Research	Educational Research Review
7.	Educational Research Review	Language Learning
8.	American Educational Research Journal	Science Education
9.	Learning and Instruction	Sociology of Education
10.	Educational Psychology Review	Review of Research in Education

Google Scholar claimed that the results of these ranked journals were due to the number of citations and dates which were automatically calculated by a computer system using a H5-index and H5-median. Resurchify's results were based on Scopus data and gathers the average number of citations over a two-year period. Due to the specific nature of this research study, many of the journals in Table 2.1 did not satisfy the overall requirements for this study. An example of the journals that were most useful for this study with the most relevant results were *The European Journal of Engineering Education, International Journal of Languages Education and Teaching, International Journal of Higher Education, Journal of Education and Practice, Educational Studies in Language and Literature,* and the *International Journal of Technology and Design Education.* Having identified the databases and journals most suitable to this research study, a narrower focused search was conducted to seek further relevant sources.

Along with a general and systematic analysis of literature, more specialist Irish-context sources were also investigated, such as, a specific documentary analysis of relevant post-primary documents and reports from the DES, and reports by other statutory bodies (as will be demonstrated below). The rationale of reviewing the internal documents was to help establish to what extent oracy and graphicacy are prioritised in the official guiding national educational documents. By reviewing different levels of documentation, it helps to see if there is a difference in prioritization at different levels and helps to establish the students' experiences prior to surveying the students. These key documents included the DES WSER from 2011 to 2021, SIR on the subjects: Construction Studies (CS), Materials Technology Wood (MTW), Technical Graphics (TG), and Design and Communication Graphics (DCG), from 2011 to 2021. These subjects were focused on for the purpose of this thesis as they coincide with the ITE programme in ATU's Department of Creative Education. The WSER and the SIR have been selected at random from a range of different schools in different provinces and counties across Ireland. The next step was to select and analyse the most relevant articles and documents for this research, this included reading and evaluating the literature titles, abstracts, and key words. Once the key literature was selected, the reference manager Mendeley was used to store and organise the articles into folders which were organised by key words such as “oracy”, “graphicacy”, etc.

The process employed in this literature review was both systematic and robust, drawing on both Maier (2013) and Sheraton and Gaeta's (2021) models and taking into consideration both literature views. By addressing what is meant by the terms "oracy" and "graphicacy" in a general and technical education context, section 2.3 seeks to eliminate terminological ambiguity. The origins of these terms, as well as the evolution of their definitions over time, will be investigated.

2.3 Oracy and Graphicacy Terminology

To understand the relevance and significance of oracy and graphicacy in this research, both terms must be defined in the context appropriate for this study. As a result, this section examines the origins, evolution, and definitions of the terms oracy and graphicacy, beginning with oracy and progressing to graphicacy.

2.3.1 Oracy: Origins, Developments, and Definitions

The term “oracy” first originated in the 1960’s by British researcher, educator, and foundational author, Andrew Wilkinson. Wilkinson who was in the field of English education, claimed that previously people had a tendency to think of English as having either reading or writing skills (Wilkinson, 1970). Wilkinson held contradictory beliefs when he described English teaching as the "verbalization of experience", which included both language production (speaking and writing) and reception (listening and reading). Literacy refers to the skills of reading and writing; however, there was no term at the time to describe the oral skills of speaking and listening. Later, Wilkinson coined the term "oracy" (Wilkinson, 1965, p. 14). The term was created by analogy between the terms literacy and numeracy, and it derives from "or" referring to "oral" and "acy" as in "literacy" (Webster, 2022). Effectively, Wilkinson suggested the term “for having general ability in oral skills is oracy; one who has these skills is orate, one without them inorate” (Wilkinson, 1965, p. 14).

Table 2.2

The Productive and Receptive Components of Oracy and Literacy (adapted from (Wilkinson, 1968)

	Production	**Reception**
Oracy	Speaking	Listening
Literacy	Writing	Reading

Although Wilkinson contends that if speaking is disregarded, listening is non-existent in educational practice, listening is a component of oracy that may be overlooked (Wilkinson, 1970). According to Wulandari and Hustarna (2020), listening is pivotal to two-way communication and works in tandem with speaking because the productive and receptive skills that oracy possesses cannot be separated, since "listening is the receptive form while speaking is the productive form". Mercer (2017) includes "Listening and Responding" as a component of their Framework for Oracy Skills as they believe that these abilities foster the growth of social and emotional competencies, both of which are important for oracy development (Mercer et al., 2017; Wilkinson, 1965). In terms of teaching and assessing listening skills, Levy (2013) describes the concept as "hard to understand, teach, and assess". However, Levy does point out that there are guidelines for effective listening as well as guidelines for teaching this ability. Table 2.3 includes the guidelines and provides information on each one.

Table 2.3

Principles for Good Listening (adapted from Levy (2013))

Principles for Good Listening		
Principle		Detail
1	Pay Attention	Focus on the person speaking, pay attention to the persons facial expressions and body language.
2	Practice Active Listening	Engage with the speaker, ask them to slow the speaking pace or to repeat what they have said. To clarify a point, repeat what the speaker said back to them to ensure you're understanding what they are saying correctly.
3	Pay Attention to Structure	In formal settings the speaker often outlines what they wish to discuss before going into further detail. This will help the listener organise their understanding.
4	Listen for Key Words	Listen out for works that the speaker emphasis a bit more than others. Pay attention to the use of words which hold importance.
5	Listen for Key Phrases or Markers	Be attentive to the speaker's use of phrases or makers which hold the main key points. For example, "what I am trying to say is…"

Levy listed five key principles for good listening, namely, 1) pay attention, 2) practice active listening, 3) pay attention to structure, 4) listen for key words, and 5) listen for key phrases or markers. Each of which play a unique role in effective listening. Listening skills have long been a source of concern for teachers, as they are regarded as one of the prerequisites for oral output in the language learning process (Yavuz & Celik, 2017). Levy (2013) outlines three important principles for teaching listening as a skill (see Table 2.4)

Table 2.4

Principles for Teaching Listening as a Skill (adapted from Levy, 2013)

Principles for Teaching Listening as a Skill		
Principle		Detail
1	Make it Explicit	Key terms such as "active listening" and "discourse marker" should be introduced and exemplified.
2	Model	When introducing new concepts teachers must model the practice with students.
3	Practice	Concepts such as active listening takes practice to encourage development and improvement in listening skills and relationships

The three main principles for teaching listening as a skill are as follows: 1) Use key terminology to make the concept you're teaching explicit, 2) model the concepts with students, and 3) practice these listening skills to improve them. Listening, the receptive component of oracy, may be the forgotten element in connection with the production and reception skills of oracy, however, oracy is frequently overlooked in terms of literacy and numeracy.

Wilkinson described how "an educated person should be numerate, orate and literate" (Wilkinson, 1965, p. 14). He highlighted how he believed there was no consideration given to speech - that it was simply another aspect of literacy, and that literacy and numeracy received more emphasis rather than a subset of them. Dating back to the late 1980's, The National Oracy Project in the UK, championed the term oracy but due to the switch of focus towards literacy and numeracy skills, the term became disused (Norman, 1992). Nonetheless, oracy often falls to the background. A common belief in universities, according to Morton and Rosse (2011), is that "writing is believed to be the main medium through which disciplinary knowledge is constructed and communicated," which renders oracy or oral literacy less significant than the other literacies (Morton & Rosse, 2011). This is reiterated by Heron et al. who claim that in the context of higher education, academic speaking has largely been overlooked and academic writing has received far more attention (Heron et al., 2022). According to a study by Millard and Menzies (2016), which involved interviewing over 900 teachers and experts across the UK, only 68% of the participants rated oracy as ‘very important’, compared to 83% for reading, 81% for writing, and 63% for numeracy, suggesting that oracy is less significant than its subsets. Their research also emphasised the proportion of teachers in different phases (early years, primary, secondary, further education) who felt oracy was ‘very important’, the results were as follows: early ears 76%, primary 76%, secondary 65%, and further education 64%. These results indicate that oracy is less of a concern for teachers in further education as opposed to the other phases of education (Millard & Menzies, 2016, p. 23).

The term “oracy” has expanded from its original basic definition by Wilkinson (1965). Oracy has become to encompass much more than speaking and listening skills. According to the Royal College of Speech and Language Therapists (RCSLT), speech, language and communication are terms more widely associated with oracy (RCSLT, 2019). The RCSLT suggest that speech is the capacity to talk freely, without hesitating or repeating, and that language requires the ability to comprehend and interpret what is said, as well as the ability of constructing sentences for starting discussions. Communication is described as our way of interacting with and conversing with others, it also makes use of gestures, facial expressions, and eye contact (RCSLT, 2017; RCSLT, 2019). Although the RCSLT suggest three terms for describing oracy, Cambridge University state that the term “oracy” is “the most succinct and precise term for referring to the skills involved in using talk to communicate effectively across a range of social contexts” (Cambridge University, 2018, p. 2). Voice21, a national oracy charity in the UK, define the term with slight variants to others, as they suggest oracy is “the ability to articulate ideas, develop understanding and engage with others through spoken language” (Voice21, 2019). Nevertheless, in this research study, the working definition of oracy is the ability to interact and engage with others through active listening and fluent effective speech, including the use of body language, facial expressions, and hand gestures.

2.3.2 Graphicacy: Origins, Developments, and Definitions

The term "graphicacy" was first used in 1965 by geographers Balchin and Coleman, who defined it as "the educated counterpart of the visual-spatial aspect of human intelligence and communication" (Balchin W., 1972). The term was created to describe the communication of relationships that cannot be adequately represented by language or mathematical representation. Boardman (1990), also a geographer, described graphicacy as the ability to visualise spatial concepts and information such as the three- and two-dimensional world often associated with map reading abilities (Boardman D. , 1990). Gaughran (1990), an Irish researcher in the field of computer assisted learning, gave an in-depth definition of graphicacy as he described it as:

> [T]he ability to encode, spatially perceive and manipulate configurations in two and three-dimensional space and to communicate these graphically. Whether it is in the encoding or the communication of spatial ideas, it is obvious that the internalization of the information (the manipulation of the mental image) which is of prime importance. This ability is referred to as spatial ability. (p. 1 & 2)

Although there is evidence to show that the term “graphicacy” has been used in past research, Danos (2012) states that there are a number of terms used to describe the communication through images and pictures, some of which include: visual communication, and visual literacy, as well as cartography and drawing to be more specific (Danos, 2012).

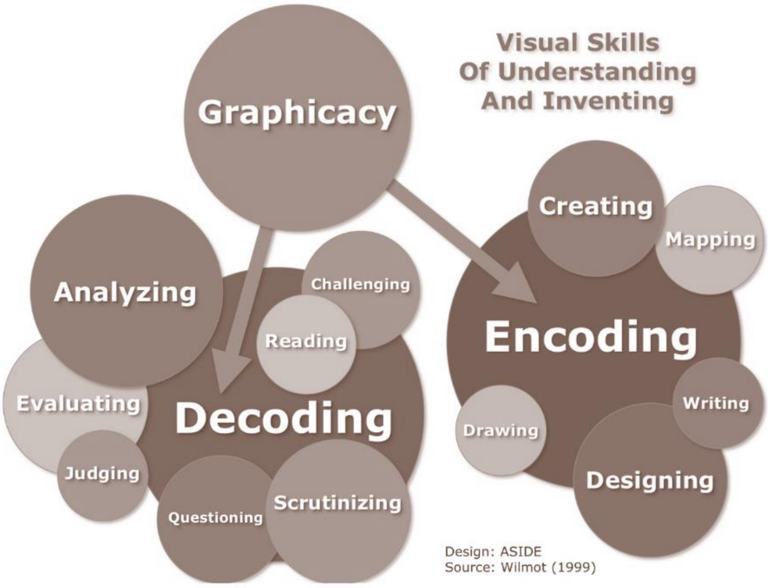
Visual literacy has been defined as the ability to communicate through visuals such as images and has been recognised as an everyday life skill (Górska, 2015).

Literacy and numeracy have been viewed as the essential basics which cover all components of education for quite some time, but with the rise of new graphic forms of representation being quickly evolved and generally utilized in educational materials, graphicacy has become another major skill which students need to develop (Balchin W., 1985; Roth, Pozzer-Ardenghi, & Han, 2005 as cited in Boucheix, Lowe, & Ainsworth, 2012, Wilmot, 2002). According to Balchin and Coleman, quality education should include all four "acies," or "aces" (literacy, numeracy, articulacy, and graphicacy). These "acies" were compared to "aces" in a deck of cards, when they argued if an ace is missing "the game is likely to be impaired" (Balchin & Coleman, 1966). That is, removing one of the four "aces" from education would leave it incomplete. By grouping graphicacy alongside literacy, numeracy, and articulacy, Balchin and Coleman demonstrated the importance of graphicacy in education while simultaneously implying that they are equals. Similar sentiments are expressed by Boardman (1990), who asserts that graphicacy is a complementary method of communication to literacy, numeracy, and oracy (Boardman D., 1990).

According to Wilmot (1999), graphicacy is a type of communication that uses symbolic language to express spatial information which requires the use of spatial perceptual concepts and skills (see Section 2.4.2.1). In order to communicate graphically, one must be able to use symbols to both encode and decode spatial information. In this context, decoding and encoding refer to the processes of interpreting and creating visual representations, respectively (see Figure 2.3). For example, giving students opportunity to both draw graphical representations as well as giving them equal opportunity to read graphical representations (Wilmot, 1999, p. 92).

Figure 2.3

Decoding and Encoding Graphicacy (image adapted from ASIDE, 2011)



Graphicacy is described by Wilmot (2002) as a ‘tool’ to communicate spatial knowledge and relationships with others. Spatial ability has been defined by Lohman (1993) as the capacity to create, store, retrieve, and modify organized visual images. Graphicacy and spatial ability are related concepts that involve the ability to understand and manipulate visual information. In-depth research has been done in the literature on the connection between graphicacy and spatial ability (Hegarty, 2004; Höffler & Leutner, 2011; Sorby, 2009; Uttal et al., 2013). Studies conducted by Hegarty (2004), Hoffler and Leutner (2011), Sorby (2009), and Uttal et al. (2013) investigated the relationship between graphicacy and spatial ability in a number of different contexts. Each of the authors found that spatial ability was positively correlated with performance on each of the given graphical tasks, suggesting that individuals with better spatial ability also had better graphicacy skills and vice versa. For example, Sorby (2009) investigated the relationship between spatial ability and engineering graphics, which is a domain that requires both graphicacy and spatial ability skills (Danos et al., 2014). The study found that students who scored higher on spatial ability tests also performed better on engineering graphics tasks. These studies suggest that these skills are closely linked and can be developed through targeted training.

Research has shown how graphicacy was first introduced to describe the skills involved to interpret maps in geography and in mathematics for communicating graphs and charts (Balchin & Coleman, 1966; Danos, 2012; Balchin W., 1972; Boardman, 2006). Nevertheless, past research has highlighted the importance of graphicacy in other subjects, such as engineering, the science subjects, art and design, as well as creating graphical displays in accounting education (Danos, 2012; Górska, 2015; Milner & Hill, 2008). Notwithstanding, Lane, Seery, and Gordon (2010) and Lane and Seery (2011) have done extensive research in Irish education on teaching graphicacy skills to undergraduate technology teachers.

For the purpose of this study, the working definition of graphicacy will refer to the ability to use, create, and mentally manipulate maps, images, diagrams, and other forms of visual and spatial documents as tools to communicate spatial information. Next, section 2.4 shares and discusses frameworks for developing both oracy and graphicacy skills.

2.4 Frameworks for Oracy and Graphicacy

The literature investigation uncovered frameworks in relation to both oracy and graphicacy that aligned with this study's interests and had the potential to contribute to the research output. Oracy frameworks and frameworks for language development and talk were more widely discovered as opposed to graphicacy frameworks. Oracy frameworks such as Mercer, Warwick and Ahmed's *The Oracy Skills Framework (2017)* which was further developed and adapted by Voice21 (2019), the Professional Development Service for Teachers' (PDST) *Five Components of Effective Oral Language Instruction, A Guide to the Teaching and Learning of Oral Language* (2014) and John Munro's *The ICPALER Framework (2011)*, are three influential oracy frameworks often cited in the literature, all of which will be explored in this section. In terms of graphicacy, this section will explore Wilmot's *Framework for Thinking About Graphicacy* (1999) and *The Framework for Visual Literacy in Higher Education* (2022) which was created by The Association of College and Research Libraries (ACRL). Oracy and graphicacy frameworks will be examined respectively.

2.4.1 Oracy Frameworks

This section will explore three oracy frameworks. Firstly, Mercer, Warwick, and Ahmed's *The Oracy Skills Framework* (2017) (see Figure 2.4) - later adapted and promoted by Voice21[4] (2019; 2022) - aimed to help students develop their speaking and listening skills. *Voice21 The Oracy Skills Framework* was developed in collaboration with Mercer, Warwick, and Ahmed, who are affiliated with Oracy Cambridge, which is based at Hughes Hall in the University of Cambridge. Secondly, the Professional Development Service for Teachers (PDST), a funded Irish education support service established in September 2010, offering "professional learning opportunities to teachers and school leaders in a range of pedagogical, curricular and educational areas" (PDST, 2022), published a framework entitled *Five Components of Effective Oral Language Instruction, A Guide to the Teaching and Learning of Oral Language.* Finally, John Munro's *A Framework for Analysing Language Use: The ICPALER Framework* will be outlined and discussed.

2.4.1.1 Voice21 The Oracy Skills Framework

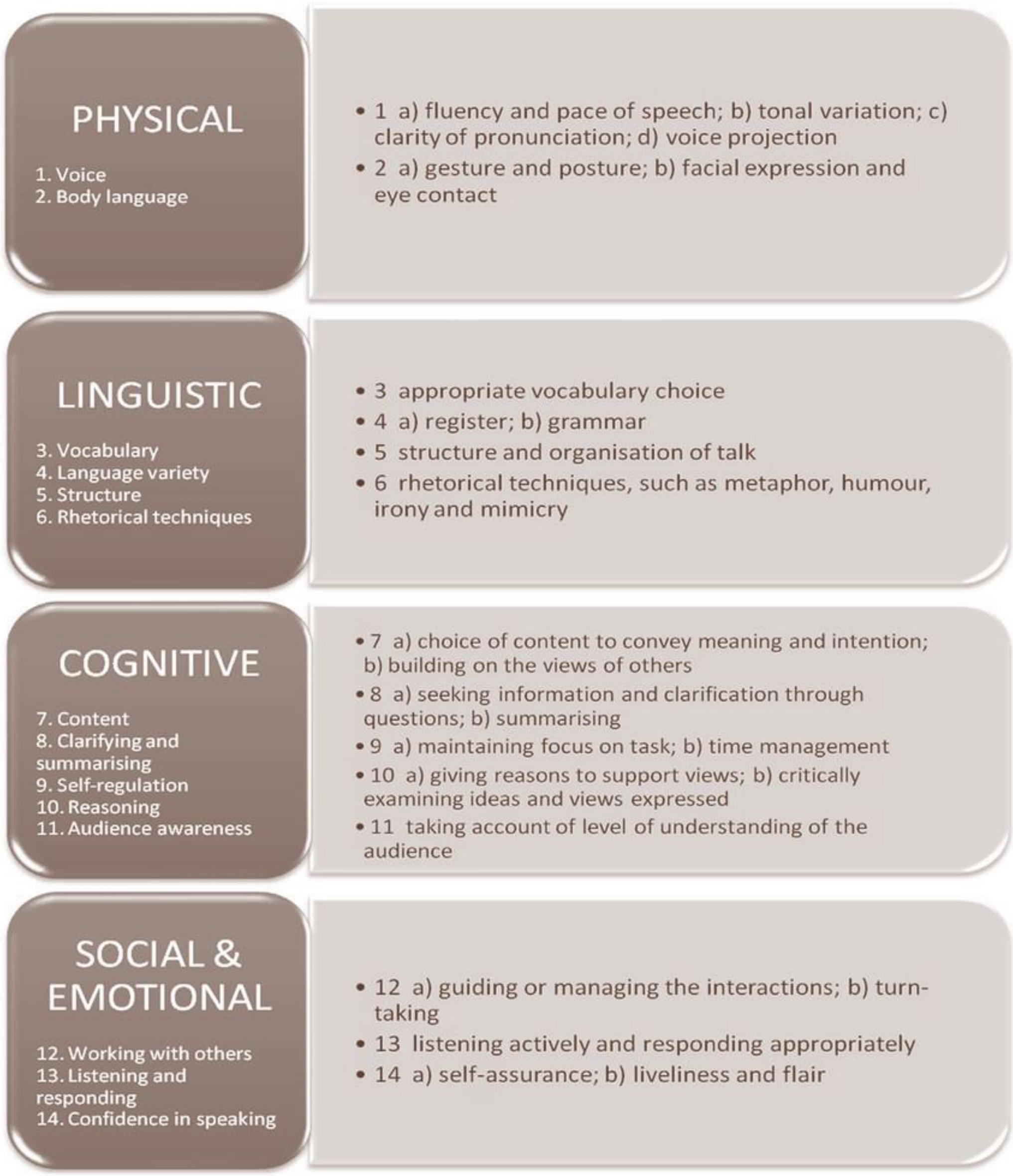
Mercer (director), Warwick (associate), and Ahmed (associate) work at the University of Cambridge's Faculty of Education in *Oracy Cambridge: The Centre for Effective Spoken Communication*. Their framework, entitled, *The Oracy Skills Framework*

[4] Voice21 is a pilot research programme funded by the Education Endowment Foundation (EEF) (completed in 2018),

(2017) was adapted and further developed in collaboration between Voice21 and the University of Cambridge. This framework defines the key skills and knowledge for oracy to be taught in a primary school setting by outlining the key skills required to be an effective listener and speaker (Mercer, Warwick, & Ahmed, 2017).

Figure 2.4

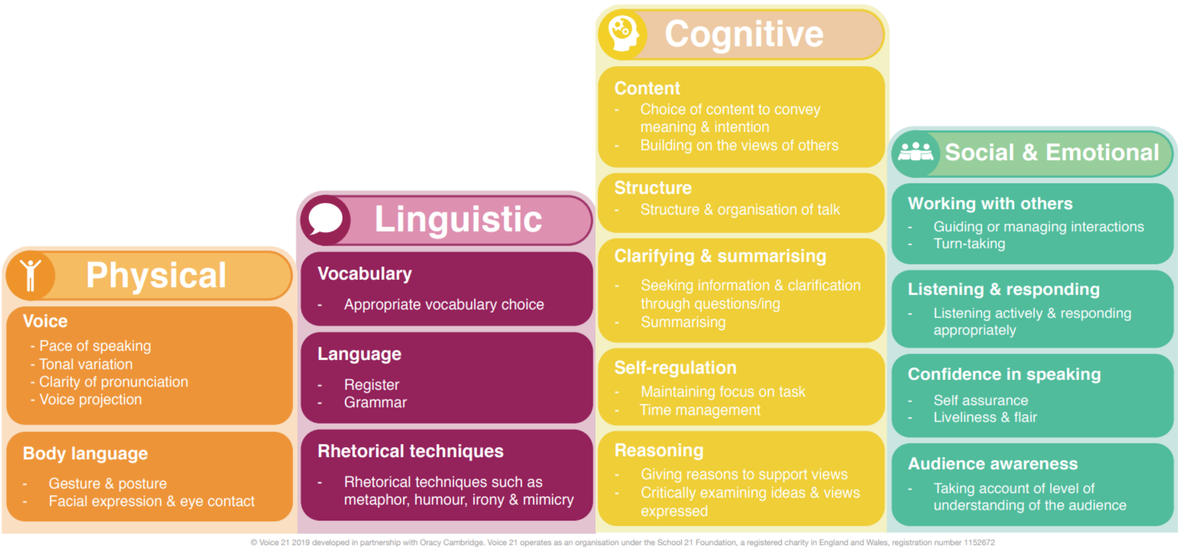
The Oracy Skills Framework (adapted from Mercer et al., 2017)



Both frameworks are built around four oracy dimensions: physical, linguistic, cognitive, and social and emotional (Kaldahl, 2019), see Figure 2.4 and 2.5. Like literacy and numeracy, oracy cannot be promoted through a single strategy since there are numerous layers in the criteria that oracy must meet for every student to succeed in developing their oracy skills (Voice21, 2019).

Figure 2.5

Voice21's Oracy Skills Framework (Voice21, 2019)



Voice21 is of the opinion that teaching oracy purposefully, explicitly, and systematically across the curriculum will help children and young people advance in the physical, linguistic, cognitive, social, and emotional aspects of oracy (Voice21, 2022). Body language and voice are examples of physical elements; the linguistic strand includes vocabulary, language, and rhetorical techniques; and the cognitive strand includes content, structure, clarifying and summarizing, self-regulation, and reasoning. Finally, the social and emotional component of oracy includes working with others, listening, and responding, speaking confidence, and audience awareness (Voice21, 2019).

With *The Oracy Skills Framework*, Voice21 also developed *The Oracy Benchmarks*, these benchmarks were developed as a way for teachers and school leaders to evaluate and guide the development of oracy in their classrooms and schools in an explicit and nurturing manor (Voice21, 2019). The Teacher Benchmarks “define excellent classroom practice for oracy” (Voice21, 2019, p. 6), and allow teachers to create and adapt how they teach oracy, based on the needs of their students. The benchmarks include five teacher and student benchmarks, see Figure 2.6.

Figure 2.6

Voice21’s Oracy Benchmarks (Voice21, 2019)

	Teacher Benchmarks	**School Benchmarks**
1	Sets high expectations for oracy	Has an ambitious vision for oracy
2	Values every voice	Builds a culture of oracy
3	Teaches oracy explicitly	Has a sustained & wide-ranging curriculum for oracy
4	Harnesses oracy to elevate	Recognises oracy as central to learning
5	Appraises progress in oracy	Is accountable for the impact of oracy

Voice21 provide ideas on what each benchmark could look like for both the teacher and the school as well as giving tips for each. Lastly, the benchmarks give a self-evaluation tool for both teachers and schools, the evaluation template lists the five benchmarks which are broken down into three columns, evaluation, intention, and action. The self-evaluation tool aims to distinguish what is currently being done, what would meeting the benchmark look like, and what needs to be done next.

The results from the pilot study (2018) identified that there was evidence to support the theory of change in pupils’ oracy competence in the pilot schools, although limited. The EEF (2018) stated:

> [G]iven the limited reliability of the assessment, and the lack of a comparison group, we cannot conclude from these results that the programme improved oracy. The pilot did not measure impact on academic attainment. (p. 5)

The overall approach of Voice21 was deemed feasible as teachers felt the programme could be implemented into a lot of school contexts given support being provided to the senior leadership body. The EEF argued that with some changes, the approach was ready to be evaluated in a trial. They suggested that its essential elements must be defined clearly, and more effort should be put into developing the oracy evaluation tool so that it can generate accurate results (EEF, 2018). Next, an Irish education document created by the PDST will be discussed.

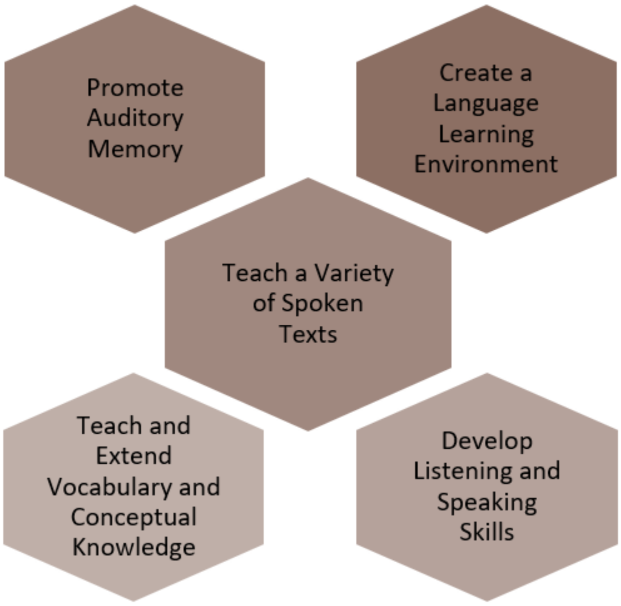
2.4.1.2 PDST Framework

The PDST who offer learning opportunities such as curriculum and pedagogy, learning and teaching methodologies, school improvement and school self-evaluation, and pupil/ student and teacher welfare, have three primary literacy publications currently available on their website, one of which is called *Five Components of Effective Oral Language Instruction, A Guide to the Teaching and Learning of Oral Language* (2014). This document provides a structured approach for teachers to implement oral language development into the classroom. The model consists of five components (see Figure 2.7).

Section one of this model discusses the component *Teach a variety of Spoken Texts.* This component aims to teach a number of different spoken texts such as oral reports, storytelling, anecdotes, conversations, questioning, interviews, partner and small group work, arguments, formal/ informal debates, and giving instructions/ procedures. The PDST emphasise the importance of students having a knowledge of these spoken text types and how they operate in different contexts, such as social, cultural, and relationships by providing an example of activities to promote development in each area.

Figure 2.7

Five Components of Effective Oral Language Instruction (adapted from PDST, (2014)*).*



Section two discusses the component *Develop Listening & Speaking Skills*, aims to teach 1) social interactions and the rules that govern it, 2) how to use the voice, and 3) the use of non-verbal behaviours, which contribute to the overall development of listening and speaking skills. Section three, *Teach and Extend Vocabulary and Conceptual Knowledge* explains how important it is for students to be familiarised with a concept first before being introduced to new vocabulary. PDST suggest when teaching vocabulary to students there are four key elements to plan for, 1) teaching individual words such as synonyms and antonyms, 2) teaching word-learning strategies such as definitions, 3) making students aware of the love of words and language by giving multiple meanings and playing word games, and 4) providing different experiences for words by reading and writing to acquire new vocabulary. Section four aims to *Promote Auditory Memory* through the methods tabulated below.

Table 2.5

How to Develop Auditory Memory Skills (adapted from (PDST, 2014)*).*

1.	Repeat and use information
2.	Recite poems, songs, tales, rhymes, etc.
3.	Memorise and sequence songs
4.	Re-tell stories, like fairy tales and myths
5.	Re-tell stories using puppets or by illustrating a map
6.	Recall verbal messages or phone numbers
7.	Play memory games like Guess Who and Chinese Whispers
8.	Recount news events
9.	Use visual cues and mnemonics

Lastly, Section five discusses how to *Create a Language Learning Environment* by focusing on three elements, 1) the physical element, 2) the classroom culture, and 3) the opportunities for communication. The PDST model provides a number of examples and ways on how to create a language learning environment. Although not recognised on the five components of effective language instruction, section six refers to “assessment” by offering a number of self-assessment methods, conferencing, portfolio assessment, concept mapping, effective questioning, teacher observation, teacher led task and tests, as well as standardised testing. In spite of this model being created in essence of primary school education in Ireland the teaching and learning strategies given could be used at post-primary level and beyond. While this PDST model does not describe this contribution as a framework, per se, these five components listed in their model can contribute to the development of a future more comprehensive framework, in combination with other similar publications and models in the literature. Next, Munro’s ICPALER framework will be outlined and discussed.

2.4.1.3 The ICPALER Framework

Dr. John Munro who is an associate professor at Melbourne Graduate School of Education, at The University of Melbourne, developed an oral language teaching framework known as *The ICPALER Framework,* a framework for analysing language use. The mnemonic stands for ideas, conventions, purpose, ability to learn, expressive, and receptive.

Table 2.6

John Munro's ICPALER Framework (adapted from (MTSS, 2022)*)*

I	The **i**deas communicated
C	The **c**onventions used to do his
P	The **p**urpose for which we communicate
AL	The **a**bility to **l**earn how to use language
E	The **e**xpressive aspect of the communication
R	The **r**eceptive aspect of the communication

Munro designed this framework for analysing oral language and to guide teachers in teaching oral language skills. It describes the different elements of spoken language from a classroom perspective and indicates how teachers may assist students in developing as communicators and language users. ICPALER promotes the use of self-talk, allowing students to become self-taught oral language teachers. It is intended to aid in teaching and evaluation by providing educators with tools for hearing and observing students' speaking and listening abilities (MTSS, 2022; Munro, 2011). Munro's framework provides a chart to help analyse the data of a conversation by comprehending what was said and thinking about what was said, both of which feed into the chart, see Table 2.7.

Table 2.7

Munro's ICPALER Chart to Analyse Conversation (adapted from (Munro, 2011)*).*

		Expressive E	Receptive R
The ideas being communicated	I		
The conventions, rules they are using. How do they use these?	C		
The purpose for communicating (theirs and others')	P		
How you learnt how to use language and how confident you feel about doing them	AL		

In terms of directing the teaching and acquisition of oracy skills for instructors and students, all three of the frameworks described in this section share a number of common objectives. The receptive/listening and productive/speaking elements, which are present in all three frameworks, as well as an element which emphasizes vocabulary growth and expansion, are examples of these commonalities. The ICPALER Framework and Voice21's Framework also both incorporate the expressive aspect of communication through body language and gestures.

Although Voice21's *The Oracy Skills Framework* (2019) promises to be helpful for primary, secondary, and sixth form teachers and students, PDST's *Five Components of Effective Oral Language Instruction* (2014) and Munro's *The ICPALER Framework* (2022) are both directed towards primary school teachers and students. None of these three frameworks, according to the analysis of them, seem to be designed with third-level teachers or students in mind. This may suggest that the development of oracy skills may be prioritized and enhanced in the early primary years and secondary school rather than a focus in third-level education. Nevertheless, some of the components mentioned in these frameworks may still be relevant and beneficial in furthering the development of oracy skills among third-level students. Next, section 2.4.2 discusses selected graphicacy frameworks.

2.4.2 Graphicacy Frameworks

This section outlines and discusses three graphicacy frameworks, namely Wilmot's *Framework for Thinking About Graphicacy as a Form of Communication* (1999), Avgerinou and Pettersson's *Theory for Visual Literacy* (2010), and *The Framework for Visual Literacy in Higher Education* by the Association of College and Research Libraries (ACRL). Each will be discussed respectively.

2.4.2.1 P. Wilmot's Graphicacy Framework

Wilmot's *Framework for Thinking About Graphicacy as a Form of Communication* (1999) identifies graphicacy skills and explains how they have been misunderstood or ignored, particularly in connection to the South African primary curriculum. Given the growing use of technology in schools, Wilmot's framework highlights the need of graphicacy comprehension and skill (Wilmot, 1999, p. 92). As a result, Wilmot advises that graphicacy should not be ignored because of its growing significance. Wilmot agrees with Matthews (1992) that graphicacy should be taught as early in education as feasible, along with oracy, literacy, and numeracy, since words, numbers, and drawings are all means of communication that are equally effective for different purposes (Wilmot, 1999, p. 91).

Throughout the framework, it is advised that in order for graphicacy to be recognized as an important form of communication in South Africa's primary curriculum, procedures and methods must be put in place to explicitly teach this concept. According to Wilmot, there is evidence to support the idea that children who have received explicit teaching in graphicacy have benefitted from the experience and that teaching should start as soon as a child enrols in school (Wilmot, 1999). She also emphasized the need to acknowledge graphicacy as a form of literacy. Wilmot described graphicacy skills as "skills for life" and said they "must be taught in a way that empowers the learner to scrutinise, question, challenge, evaluate and judge the message being conveyed" in one particularly noteworthy statement (Wilmot, 1999, p. 93).

Both "spatial perception" and "spatial conceptualisation" were identified as the foundations upon which graphicacy can be built by the framework. Spatial perception is divided into two parts: the physical aspect of graphicacy, seeing, and the intellectual aspect, interpreting. Spatial perception has been defined as the ability to perceive space; according to Wilmot, it is a mental concept. It involves the use of such words like above, below, behind, in front, etc. According to Van Wyngaard (2021) spatial perception is the ability to understand an object's position in respect to you or to other items as well as the capability to understand the orientation or positioning of an object. The ability to identify, organize, categorize, structure, and interpret objects, what they are, how and why they are, is referred to as spatial conceptualisation. Wilmot (1999, p. 94) states that "if spatial perceptual skills are poorly developed, an individual will not be able to develop spatial understanding" and vice versa. She explains how graphicacy skills should be taught using both encoding and decoding processes, with encoding being used in drawings and maps and decoding being used in reading and writing.

Wilmot cited Fry (1981) while describing how many components of graphicacy are taught and visible in many schools, even though graphicacy education as a concept is poorly understood and developed. Wilmot interviewed many teachers and student teachers, and they all had similar attitudes toward graphicacy, despite the fact that most were unfamiliar with the term and knew little about it. On the other hand, many of these teachers indicated that they used many visual resources in their classrooms, such as pictures, posters, and diagrams, implying that graphicacy is present even if it is not explicitly or structurally taught. Wilmot suggests that graphic representations are used in classrooms whilst children are just assumed to require these skills to interpret them as they grow. She asks about the South African curriculum and wonders who would be responsible for teaching graphicacy if it were to be added. Given that primary school teachers are "generalists rather than subject specialists," it is reasonable to dispute the assumption that they possess these skill abilities (Wilmot, 1999, p. 94).

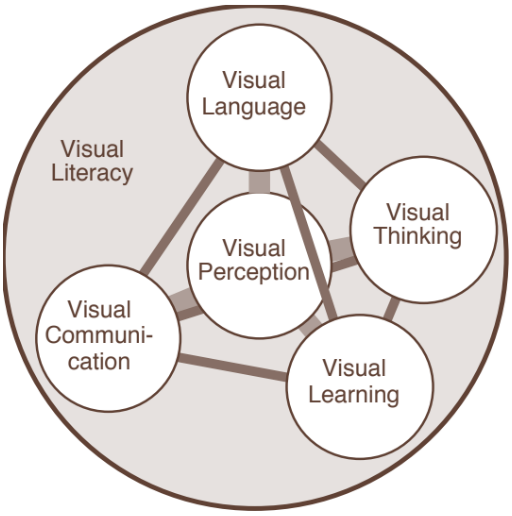
Finally, Wilmot stated that PS teacher programmes and in-service programme providers must be evaluated and redesigned to include elements and strategies to develop the capacity to teach graphicacy (Wilmot, 1999, p. 94). Making changes in ITE programmes and institutes will have an impact on primary and secondary education since the skills developed will be transferred.

2.4.2.2 Theory of Visual Literacy

Avgerinou and Pettersson (2010) developed a cohesive theory of visual literacy after discovering that visual literacy scholars had yet to agree on a theoretical framework for the concept, thus their contribution. Although there is a terminological ambiguity because this approach references "visual literacy" rather than "graphicacy", they both essentially refer to the same thing. Moreover, Avgerinou and Pettersson's (2010) proposed theory included five main components which all interlink with one another (see Figure 2.8). These include visual language (ViL), visual thinking, visual learning, visual communication, and visual perception. They believe that these five components successfully intertwine to create visual literacy.

Figure 2.8

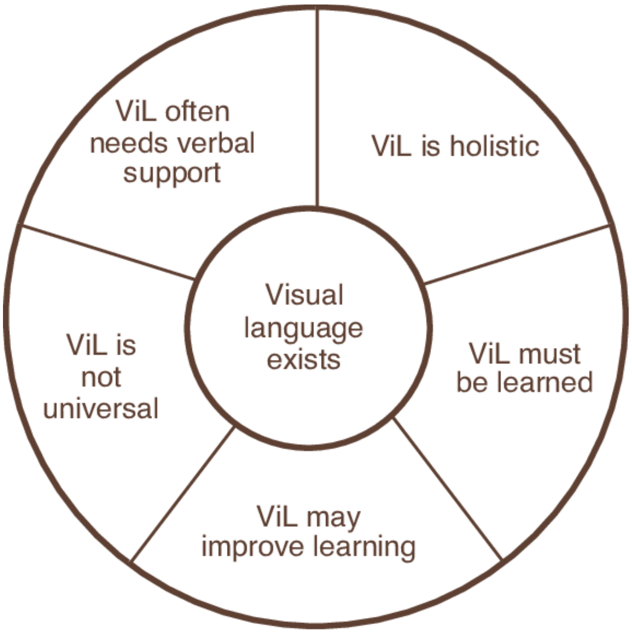
The Visual Literacy Theory and Components (adapted by Avgerinou & Pettersson, 2010)



Avgerinou and Pettersson's (2010) theory shares an example of how one of the visual literacy components (ViL) can be broken down further into constituent parts (see Figure 2.9). The first part is ViL exists. Avgerinou and Pettersson (2010) define ViL as a form of communication, which includes visual grammar, syntax, and vocabulary. According to them, visual literacy is based on the existence of a ViL or language, like verbal language. The second part of ViL is the holistic element. Avgerinou and Pettersson (2010) compare the ability and effectiveness of languages and ViL in expressing concepts. They conclude that only people with the necessary specialised knowledge can understand languages, whereas visual representations "are iconic and often resemble the thing they represent" (Avgerinou & Pettersson, 2010, p. 36). They believe ViL is holistic because of the effectiveness of its interpretation by a wide range of individuals.

Figure 2.9

Visual Language and Its Constituent Parts (adapted by Avgerinou & Pettersson, 2010)



Part three of the ViL theory is how it must be learned. Although visuals can be understood at a fundamental level, they are complicated, and in order to understand the complexity and fully comprehend a visual representation, the skills must be mastered, according to Avgerinou and Pettersson (2010). Part four suggests that ViL may improve learning. The success of a visual can be favourable or negative depending on the type of information, the medium employed, and the amount of time allotted for interaction with the visual. So, according to Avgerinou and Pettersson (2010), putting a suitable picture in the right content may enhance learning.

Part five states that ViL is not universal. Due to contrasting cultures and understandings of symbols, ViL is not universal and won't be unless “the world shares a common culture” (Avgerinou & Pettersson, 2010, p. 38). Although they argue that there are visuals and symbols which are universally understood, not all symbols have one globally accepted meaning. Lastly, part six of ViL is how it often needs verbal support. Barthes

(1977, as cited in Avgerinou & Pettersson, 2010) suggests that most images can have multiple interpretations unless a caption limits them to one. Therefore, it is sometimes necessary to pair visuals with verbal communication to ensure the visual is interpreted correctly.

Avgerinou and Pettersson’s (2010) theory of visual literacy highlights five key components of visual literacy necessary for the ability to interpret and communication through it. Although the term graphicacy was not mentioned explicitly in this theory, the content is applicable to both. Following that, the ACRL's *Visual Literacy Framework*, which uses similar terminology and also refers to "visual literacy", will be discussed.

2.4.2.3 ACRL’s Visual Literacy Framework

In 2011, The Framework for Visual Literacy in Higher Education was developed by ACRL. According to ACRL, the world in which we live in today relies hugely on visual materials and this is seen throughout education programmes also, as students engage with images and other forms of visual resources. Although visual materials are widely used in education and beyond, it is important to remember that visual literacy or the ability to interpret visually needs to be practiced and developed, as often it can be expected from students. Visual literacy, according to Daniş (2021), is a skill that is directly related to abilities such as perceiving, thinking, analysing, interpreting, and designing, and it is becoming increasingly important in the information age. For that reason, visual literacy needs “to be taught, supported, and integrated into the curriculum” (ACRL, 2011). The capacity to identify, comprehend, assess, use, and produce pictures and visual media is referred to as visual literacy, according to the ACRL. Someone who is deemed visually literate has the capacity to critically consume and contribute to visual media.

Table 2.8

Abilities of a Visually Literate Individual in Higher Education (adapted from ACRL, 2011)

Determine the nature and extent of the visual materials needed
Find and access needed images and visual media effectively and efficiently
Interpret and analyze the meanings of images and visual media
Evaluate images and their sources
Use images and visual media effectively
Design and create meaningful images and visual media
Understand many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and access and use visual materials ethically

This document highlights the gap in literature in accordance with visual literacy standards and outcomes and aims to address it by providing tools for educators in higher education. The framework consists of seven standards each containing performance indicators and learning outcomes for each performance indicator, see Table 2.9 for an example. These seven standards have been expanded in an infographic created by Hattwig, Bussert, Medaille, & Burgess (2013), see Appendix 1.

Table 2.9

Example of ACRL's Framework: Standard One (ACRL, 2011)

Standard One:	
The visually literate student determines the nature and extent of the visual materials needed.	
Performance Indicators:	
3.3.1	The visually literate student defines and articulates the need for an image.
Learning Outcomes:	
a.	Defines the purpose of the image within the project (e.g., illustration, evidence, primary source, focus of analysis, critique, commentary)
b.	Defines the scope (e.g., reach, audience) and environment (e.g., academic environment, open web) of the planned image use
c.	Articulates criteria that need to be met by the image (e.g., subject, pictorial content, color, resolution, specific item)
d.	Identifies key concepts and terms that describe the needed image
e.	Identifies discipline-specific conventions for image use

Although this framework does not directly mention graphicacy, the ability to interpret and communicate using visuals (visual literacy) is an aspect of and is essentially, graphicacy. This framework provides a useful set of standards and learning outcomes for teachers and professors to incorporate into lessons to encourage the development of visual literacy and could be developed further to encompass all elements of graphicacy.

All three frameworks and theories mentioned in this section have similar beliefs and thoughts about the importance of visual literacy/ graphicacy and argue the need for it to be supported, taught, and integrated into the curriculum in an explicit manner. Wilmot’s (1999) framework for thinking about graphicacy focuses primarily on the primary curriculum in South Africa, in comparison to ACRL’s (2011) framework, which focuses on higher education. Although Wilmot’s (1999) framework highlights the importance and the need for graphicacy implementation, and Avgerinou and Pettersson's (2010) theory provides statements for understanding visual literacy, they do not provide a practical and useful solution for teachers or pupils. ACRL’s (2011) framework, on the other hand, does provide a useful set of standards and learning outcomes for educators to embed in their lessons to encourage the development of their student’s visual literacy/ graphicacy skills. Next, section 2.5 explores the development of oracy and graphicacy in ITE.

2.5 Development of Oracy and Graphicacy in Initial Teacher Education

The Organisation for Economic Co-operation and Development (OECD) developed the Programme for International Student Assessment (PISA) in 1997. PISA measures 15-year-old’s skills in reading, mathematics, and science knowledge to meet real life challenges. In 2011 in Ireland, The Department of Education and Skills (DES) released a document called *Literacy and Numeracy for Learning and Life: The National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011-2020.* Since its publications, this document has been implemented as a national strategy to improve literacy and numeracy skills among children and young people by the year 2020. Prior to its introduction, in 2009, PISA scores in Ireland for reading continuous and non-continuous texts (literacy) were rated as “average” and mathematics (numeracy) was “below average” (Department of Education and Skills, 2011). In PISA’s most recent assessment in 2018, Ireland have rated above OECD’s average score in both reading continuous and non-continuous texts and in mathematics (OECD, 2019). The implementation of the national strategy in 2011 has had a positive impact on the growth of 15-year-olds reading and mathematics skills. This strategy encourages teachers to be more conscious of the importance of literacy and numeracy for learning and life and allows them to purposely embed the development of these skills through the teaching of their subjects.

The DES’s literacy and numeracy strategy understands literacy as encompassing not only as reading and writing skills, but as the ability to read, use and understand spoken language, speaking and listening skills, as well as the ability to comprehend printed text, broadcast media and digital media (Department of Education and Skills, 2011). Numeracy is described as not only the ability to add, subtract, divide, and multiply numbers, it is the ability to use mathematical understanding and skills to have a spatial awareness to understand sequences and patterns, and to use mathematical reasoning to solve problems (Department of Education and Skills, 2011).

Oracy and graphicacy are not explicitly mentioned in the 2009 strategy, although elements each are mentioned under the categories of literacy (spoken language) and numeracy (spatial awareness). Even though the DES believe that spoken language and oral language skills are a key skill which should be developed, there is no way of assessing these skills through the PISA programme alone, as its focus is on reading and mathematics (Anne-Grete Kaldahl, 2019). The development of oral language skills has not fully been exploited in the classrooms due to the focus on “teaching to the examination” (Department of Education and Skills, 2011), despite the fact that opportunities have been provided by the syllabus to engage students to develop their literacy and oral language skills (Department of Education and Skills, 2011). Oral language skills such as speaking and listening does not appear to be a priority skill for teachers to teach explicitly, compared to reading and writing. Jim Rose, in his 2006 report, argued that if speaking and listening became more widely taught, literacy development would be affected and be enhanced (as cited in (Alexander, 2013)).

The Teaching Council (TC) who are the professional standards body for the teaching profession in Ireland, promotes and regulates professional standards in teaching. In 2020 the TC publishes a document called *Céim: Standards for Initial Teacher Education 2020.* This document provides the requirements for all teacher education programmes in Ireland which must be adhered to in order to gain accreditation from the TC. This document includes a list of core elements of ITE programmes in which literacy, numeracy, and digital literacy are named. According to the document, student teachers must improve their own capacities in these areas, demonstrate their expertise, and lastly apply these skills to their individual subject area and curriculum (The Teaching Council, 2020, p. 14). The Céim standards do not define literacy, numeracy, or digital literacy therefore it is unknown what these skills encompass. From analysing the document, neither oracy or graphicacy were explicitly included as a necessary element for ITE providers to incorporate and develop into their programmes.

Recently in July 2021 the Government of Ireland issued a 10-year adult literacy, numeracy and digital literacy strategy named Adult Literacy for Life Strategy, A 10–Year Adult Literacy, Numeracy and Digital Literacy Strategy Adult Literacy for Life (2021). The purpose of this strategy is to build a fully inclusive and fair society and economy by providing literacy skills to all adults. This strategy is underpinned by the vision of “[a]n Ireland where every adult has the necessary literacy, numeracy and digital literacy to fully engage in society and realise their potential”. According to this strategy document the term “literacy” involves listening, speaking, reading, writing, numeracy, and communication technology (Government of Ireland, 2021). Although this strategy does not expressly include the terms “oracy” or “oral literacy,” it does include listening and speaking under the term “literacy”. Graphicacy, on the other hand, was not alluded to throughout the text, nor were components of it referred to.

Wilmot suggests that “the curriculum design of both pre-service and in-service teacher education courses needs to be evaluated if ways of developing the capacity to teach graphicacy are to be sought” (Wilmot, 1999, p. 94). These implications for ITE programmes would encourage both oracy and graphicacy development and implementation if executed. As this study focuses on oracy and graphicacy implementation and development within the technical subjects and ITE, none of the documents mentioned in this section have provided solutions on how to improve and implement these skills in the technical subjects. Therefore, oracy and graphicacy will be discussed in terms of wider technical education, next.

2.6 Oracy and Graphicacy in Technical & Initial Teacher Education

This research contains a case study of an ITE university in Ireland, namely ATU Connemara which trains PS teachers in the field of post-primary technical education. An original documentary analysis of module descriptors (MD) pertaining to the ITE programme at ATU were analysed regarding their explicit and implicit mention of oracy and graphicacy (see Section 2.6.2). The technology suite of subjects which are focused on in this case study are Wood Technology (WT), Graphics (G), Construction Studies (CS) and Design and Communication Graphics (DCG). WT and G are both Junior Cycle (JC) subjects which have recently been reformed and implemented in 2019 to the new JC Specification (NCCA, 2017). The new JC subjects were built to include key skills, see Figure 2.10.

In terms of oracy development within the technical subjects, the new JC reformed subjects now include the eight key skills in their specifications. These skills are being literate, managing myself, staying well, managing information and thinking, being numerate, being creative, working with others, and communicating. Although the term “oracy” has not been mentioned specifically in the eight skills, “communicating” and “being literate” can be linked with oral language development. The skill of “communicating” lists a number of oracy related elements such as: using language, listening and expressing myself, performing and presenting, and discussing and debating, all of which are components and very relevant to the development of oracy skills. The skill of “being literate” also mentions elements of oracy like developing my understanding and enjoyment of words and language, expressing ideas clearly and accurately, and developing my spoken language, although these skills aren’t technical subject specific, they are all contributing factors in personal oracy development.

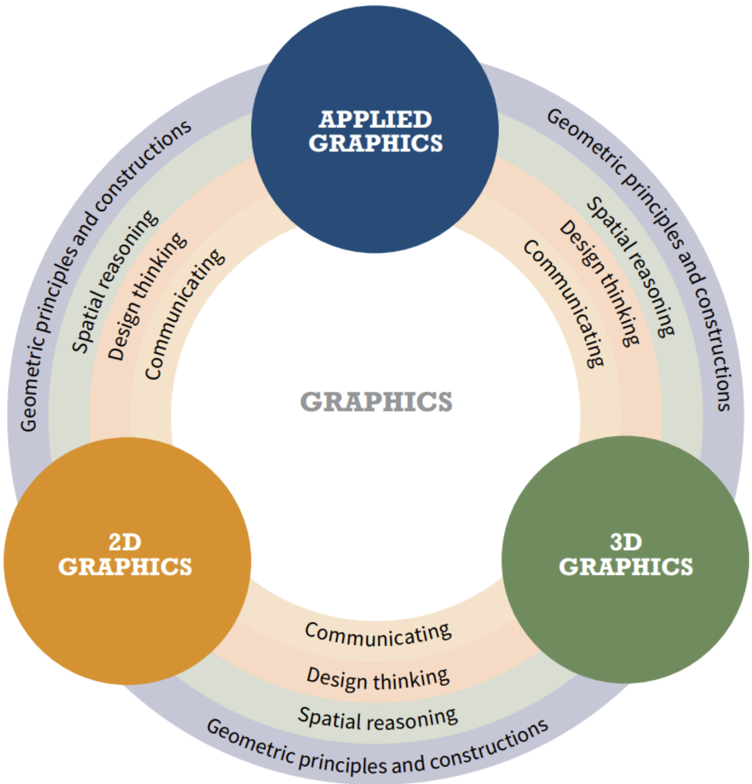
Figure 2.10

Junior Cycle Key Skills (NCCA, 2017)

The term graphicacy, like oracy, is not evident in the six key skills document. Despite this, there are elements which can be associated with graphicacy. These skills include developing a positive disposition towards investigating, reasoning and problem solving, gathering, interpreting, and representing data which are encompassed in the key skill “being numerate”, and “thinking creatively and critically” which is an element of the key skill “managing information and thinking”. In addition to what has already been said about oracy, the links between graphicacy and the key skills are not (technical) subject specific but are implemented through the key skills into all junior cycle subjects since 2019. The specification for JC Graphics focuses on developing several skills through “three inter-connected contextual strands” (NCCA & DES, 2018), see Figure 2.11.

Figure 2.11

The Strands and Elements of Junior Cycle Graphics (NCCA & DES, 2018)

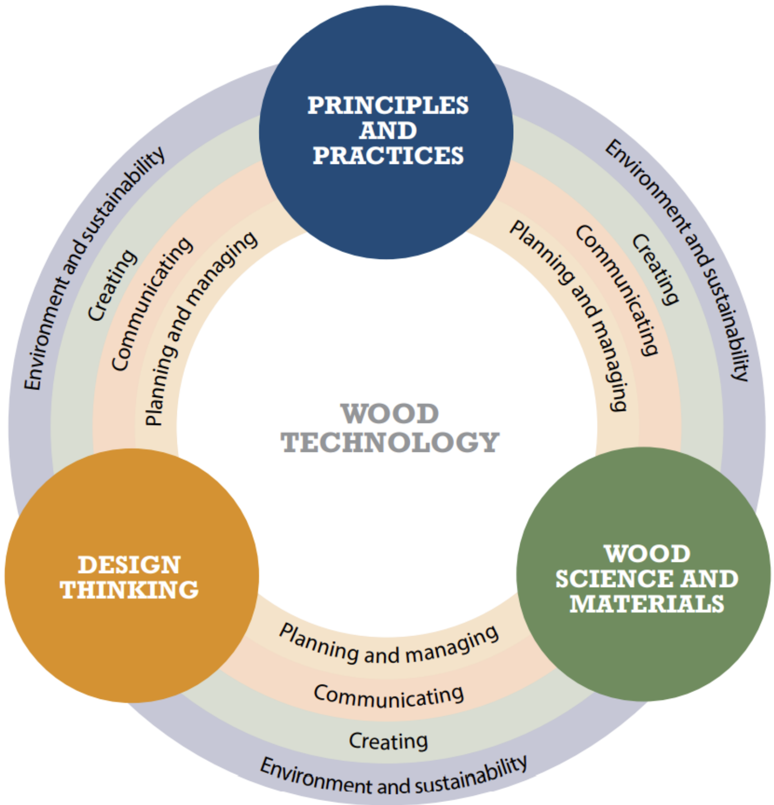


These strands include Applied Graphics, 3D Graphics and 2D Graphics, all of which are inter-connected by four elements, communicating, design thinking, spatial reasoning, and geometric principles and constructions. Graphicacy may be seen in all four elements and inter-connected strands as each involve a high graphicacy content, but oracy is not explicitly mentioned in the Graphics specification. Although the definition of 'Communication' in the specification glossary does mention verbal communication, all the formal assessment is based on visual communication.

The specification for JC WT is structured like G as it is made up of strands and elements, see figure 2.12. The strands that make up WT include principles and practice, wood science and materials, and design thinking, these are connected by the elements of environment and sustainability, creating, communicating, and planning and managing. A related segment of oracy has been mentioned throughout the "communicating" element as the expanded information regarding the elements mentioned the use of "technical language" (NCCA & DES, 2018).

Figure 2.12

The Strands and Elements of Junior Cycle Wood Technology (NCCA & DES, 2018)



Alternatively, graphicacy relations may be seen in strands such as principles and practices, and design thinking, and in all elements except environment and sustainability. Sections 2.6.1 examines the documentary analysis findings from the investigation of Whole School Evaluation Reports (WSER) as well as Subject Inspection Reports (SIR) relevant to the previously specified technical subjects, with emphasis on oracy and graphicacy.

2.6.1 Documentary Analysis: Oracy and Graphicacy in Key Technical Education Documentation

As this documentary analysis is focusing on the period 2016 to 2021, this section analyses the curricula which were utilised during that time, which include: TG, DCG, MTW and CS. Along with the curricula for these subjects, 24 DES WSER and 40 SIR from 2016 to 2021. The SIR focused on the technical subjects MTW, TG, CS, and DCG. These documents were analysed for the purpose of gauging the position of oracy and graphicacy in terms of assessment from the perspective of the DES. First, oracy within technical education will be discussed followed by graphicacy within technical education.

2.6.1.1 Oracy within Technical Education

Technology education was first introduced into post- primary education in Ireland in 1885, since then the syllabi have undergone a number of revisions and changes (Leahy & Phelan, 2014). In 2007 Technical Graphics (TG) was introduced to replace the subject of Technical Drawing (TD). In more recent years, 2019, TG has been replaced by G due to the implementation of the new Junior Cycle (JC). In 2018, the NCCA and the DES replaced MTW with WT for that same reason. As this study focuses on reports and documents from 2016 to 2021, both TG and G will be discussed.

With respect to the methodology employed in the documentary analysis in this study, the analysis of both curricula, WSER and SIR involved visually scanning and inputting key word searches into each of the documents. An example of the key word searches included: oracy, oral, oral literacy, oral communication, verbal, graphicacy, graphical literacy, visual, spatial, sketching, literacy, and numeracy. Key information which included these key words or were deemed appropriate in terms of this analysis from the curricula were noted using pen and paper, and due to the number of reports, the key information from them were copied and pasted into an Excel spreadsheet (see Appendix 2). The Excel spreadsheet was divided into three main sections, namely, oracy, graphicacy, and other (literacy/ numeracy), see Table 2.10.

Table 2.10

Example of Documentary Analysis using Excel (Author's Original)

2018			
SCHOOL/ COUNTY	COMMENTS		
	ORACY	GRAPHICACY	OTHER
Mayo - St. Louis Community School		While the standard of **draughtsmanship** was good, there is an opportunity to enhance learning through the inclusion of notes and	The development of students' **numeracy and literacy** skills was integral

Thorough examination of the curricula and syllabi listed above has revealed that not one of the curricula mention the term "oracy" or "oral literacy". MTW and CS have no mention of any skills related to oracy, though TG and DCG mention very little. Assessment objectives linked to the TG curriculum mention how the ability to "interpret drawings, diagrams, and other graphical data and spatialise written, or oral information" (NCCA, 2007), this use of "oral information" was the only mention of oracy related aspects to the TG curriculum. The DCG curriculum states a list of general aims and objectives for TE, one aim was to facilitate the development of a range of communication skills such as verbal, graphic, and model, and an objective being to interpret verbal, written and mathematical information and to represent it graphically. Although the correct term wasn't used in this document it did refer to the development of verbal communication skills, therefor oracy development can be justified in the DCG curriculum.

Based on the analysis of the MTW, and CS curricula and syllabi, "oracy" was never mentioned. One of MTW's aims mentions "graphic and other appropriate communication skills" (DES & NCCA, 2021). MTW's only possible connection to oracy is its mention of "other appropriate communication skills", this is a vague statement but could encompass oracy skills. CS, like MTW has a similar scenario where it aims to "communicate ideas and information by appropriate methods" (NCCA & DES, 2021), this statement is undefined as to what it includes but could possibly include oral communication methods. As you can see from the results there has been very little mentioned on the core aspects of oracy in TE according to the curricula. To get a deeper understanding and clearer representation of oracy in the technical subjects WSER and SIR have been collated and analysed regarding the implementation and or assessment of oracy between 2016 and 2021 across a range of different schools and counties across Ireland.

An analysis of the DES WSER and SIR between the years 2016 and 2021 have been analysed in a hope to be able to determine the level of importance the DES hold oracy and graphicacy skills in terms of assessment in post-primary schools in Ireland. Documents were accessed and downloaded from the "gov.ie" website in the 'Inspection Reports' section online. This section gave an option to refine the search by selecting the county (all), school level (post primary), inspection type (whole school evaluation/ subject inspection), subject (MTW, TG, CS, DCG), and lastly you were able to select the dates (01/01/2016 to 31/12/2021). Firstly, the results from the analysis of the WSER will be discussed followed by the SIR findings.

The study of DES's WSER has shown that out of 24 WSER, one report mentioned the term "oracy" and one other report mentioned the term "oral literacy". Oracy was stated in the context of an "Operation Oracy" school event which had taken place to improve the development of oracy skills. Oral literacy was mentioned in a comment towards presentation skills, indicating that if greater attention had been given to presentation skills, oral literacy would have been enhanced. Three reports commented on the target language in subjects, the target language generally referred to second language (L2) acquisition rather than the technical subjects. 19 out of the total of 24 reports had no comments or mention of oracy skills, that is almost 80% of the selected reports that did not consider oracy skills development as an important skill to assess, it is important to keep in mind that these 24 reports were selected randomly throughout post-primary schools in Ireland.

Taking a deeper look into the implementation of oracy in the technical SIR has revealed that out of a total of 15 MTW and CS reports, 11 did not mention oracy nor did they mention the skills involved. A similar imbalance has been seen in the TG and DCG reports, with 16 out of 21 reports lacking any comments of oracy-based skills. Three TG and DCG reports did specifically mention "oral literacy", while no SIR mentioned the term "oracy". From the minority of reports that did mention elements of oracy they commented on elements such as presentation skills, discussion and dialogue, oral development feedback, pronunciation of words and reading aloud. From the analysis of selected WSER and all the SIR regarding the chosen technical subjects, it is evident that there is huge room for improvement in the development and implementation of oracy in technical education in Ireland. Much more attention can be given to group situations which produce natural speaking (Wilkinson, 1965). Oracy taught explicitly is scarce although it is served as a basis and is extremely important in school, work-life, and society (Anne-Grete Kaldahl, 2019). As oracy is interrelated to other literacies and thinking it becomes "especially crucial to establish and boost oracy … as a discipline on its own" (Anne-Grete Kaldahl, 2019).

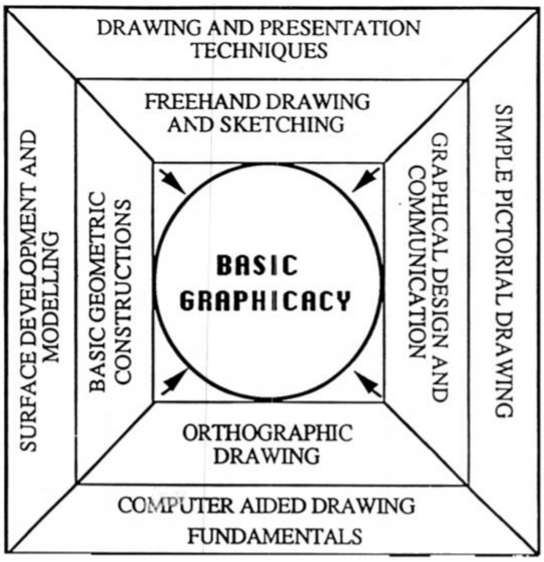
2.6.1.2 Graphicacy within Technical Education

Like the analysis of oracy in technical education, the same approach was taken to analyse the documentation for graphicacy (see Section 2.6.1.1). This section focuses on the analysis of graphicacy within key technical educational documentation in Ireland between the years 2016 and 2021. First, graphicacy within the technical curricula will be discussed, followed by WSER and lastly the findings from the SIR.

From the analysis of the historical TG curriculum, it is very clear that graphicacy skills are very much the glue which holds this subject together. The image below was taken from the TG curriculum, and it shows the many elements of TG and how they all contribute to the development of basic graphicacy skills.

Figure 2.13

Elements of Technical Graphics (NCCA, 2007)



One of TG's main aims is "to encourage the development of the cognitive and practical manipulative skills associated with graphicacy" (NCCA, 2007). This subject aims to encourage the development of visuo-spatial abilities, the communication of spatial information, the ability to spatialise and visualise two- and three-dimensional configurations and to understand the importance of communicating information graphically. All of these skills are strongly associated with basic graphicacy which suggests that graphicacy was evident in the old TG curriculum.

DCG which is the Leaving Certificate (LC) follow on from TG/G, aims to make a unique contribution to student's development of cognitive and practical skills. These skills include "graphicacy/graphic communication, creative problem solving, spatial abilities/visualisation, design capabilities, computer graphics and CAD modelling" (DES & NCCA, 2006). It is clear from the analysis of both TG and G at JC, and DCG at LC that these subjects truly encompass a number of elements and contributing factors which encourage the development of graphicacy skills. As the subjects include many elements of graphicacy it should be purposefully implemented into the teaching of these subjects at post-primary level. MTW and CS will be discussed next.

As stated earlier, MTW aims to "contribute to the development of graphic and other appropriate communication skills" (DES & NCCA, 2021). In addition to the aim of the subject, the ability to demonstrate graphical and other communication skills is one of the assessment objectives. From the analysis of the MTW curriculum the term "graphicacy" has not been mentioned, although "graphical communication" has been used as an alternative. In MTW skills such as freehand sketching and communicating designs and ideas are required to be developed and these skills are definite elements of graphicacy. In contrast to G, TG, DCG, WT and MTW, CS is the only subject that doesn't mention graphicacy or graphical communication specifically. Again, as mentioned previously, CS aims to "develop the pupil's ability to communicate ideas and information by appropriate methods" (NCCA & DES, 2021), this is a very broad statement but could potential employ graphicacy as a method to communicate ideas through sketching and working drawings.

From the analysis of all curricula for the subjects mentioned above it is clear that graphicacy has a huge role in the majority of these subjects. According to the DES, “[t]he curriculum sets out, not only what is to be taught, but how learning in the particular subject area is to be assessed” (DES, 2021). As five curricula specifically mention graphicacy/ graphical communication and CS mentioning the ability to communicate information by appropriate methods, this indicates that teachers have a responsibility to create opportunities for the specific implementation and encouragement of the development of graphicacy skills. In the hopes to discover whether graphicacy is being imbedded into post-primary technical education WSER and SIR have been analysed and will be discussed next.

The examination of DES’s WSER revealed that not one of the selected WSER from 2016 to 2021 mentioned the term graphicacy nor did they refer to any skill or element of graphicacy in their script. This may be considered a significant finding as the WSER not only takes into consideration the technology subjects but includes the whole school, as well as subjects such as mathematics and geography which, according to Balchin and Coleman (1966), don’t “absorb the whole of graphicacy” (p. 25) but contribute to the development of the skill. In addition to the analysis of WSER, SIR have been examined which included all TG and DCG SIR and MTW and CS SIR from years 2016 to 2021 which was a total of 36 subject reports. 15 of these reports were MTW and CS and the remaining 21 were TG and DCG.

Findings disclosed that no SIR explicitly mentioned ‘graphicacy’ or ‘graphical communication’ or similar. 14 reports mentioned the development of visualisation skills, three of which mention specific spatial visualisation and spatial problem-solving skills and three distinctively mention three-dimensional visualisation. 16 reports in total mention drawing/ draughting/ sketching skills development and/ or teaching. A total of 15 reports has no mention of any skills of graphicacy or implementation into either MTW and CS or TG and DCG. These findings suggest poor implementation and assessment of graphicacy skills within the technical subjects in Ireland. Considering that each of these technical subjects are founded on graphicacy elements, the lack of, or minimal, consideration of graphicacy skills development across 41% of subject reports, is a finding of note. The following section, Section 2.6.2, examines a documentary analysis of the ITE case studies MD in an effort to ascertain the degree of oracy and graphicacy consideration.

2.6.2 Documentary Analysis: Oracy and Graphicacy in Key Initial Teacher Education Documentation

A documentary analysis of ATU's ITE programme documents pertaining to the *BSc in Education (Honours) Design, Graphics, and Construction* programme was conducted. The documentation that was examined were the MD from years one to four of the programme, which was a total of 26 MD, seven year one (Y1) modules, eight year two (Y2) modules, six year three (Y3) modules, and 5 year four (Y4) modules. A thorough investigation into the inclusion of oracy and graphicacy elements and the explicit use of the terminology throughout each MD took place.

Each module descriptor comprises of the following sections, Module Description, Learning Outcomes, Indicative Syllabus, Teaching and Learning Strategies, Assessment Strategy, Repeat Assessment Strategies, Indicative Coursework and Continuous Assessment. The evaluation included each of these areas respectfully and for the purpose of this study the sections 'Assessment Strategy' and 'Repeat Assessment Strategies' were grouped together. Each module descriptor was examined visually as well as the input of key word searches related to oracy and graphicacy.

Y1 modules included: School Placement 1, Education Projects 1, Technical Graphics, Learning and Innovation Skills, Manufacturing Skills 1, Design Elements, and lastly, Materials and Techniques. Table 2.11 displays the presence of explicit oracy and graphicacy terminology references and implicit elements of both which were evident in the

MD. The green tick in the circle indicates an explicit mention of either oracy or graphicacy, while the black ticks clarify an implicit connection to one of those two terms (see Figure 2.14).

Figure 2.14

Explicit and Implicit Oracy and Graphicacy Module Descriptor: Key

Implicitly referred to in the document	✓
Explicitly referred to in the document	✅

Table 2.11 displays the explicit and implicit mention of oracy and graphicacy in the Y1 MD.

Table 2.11

Explicit and Implicit Oracy and Graphicacy: Year 1

Module Title:	**Module Descriptor**		**Learning Outcomes**		**Indicative Syllabus**		**Teaching & Learning Strategies**		**Assessment/ Repeat Assessment Strategies**		**Continuous Based Assessment**	
	O	**G**	**O**	**G**	**O**	**G**	**O**	**G**	**O**	**G**	**O**	**G**
School Placement 1	✓	✓	✓		✅	✅	✓		✓			
Education Projects 1		✓	✓	✓		✓	✓	✓	✓			
Technical Graphics		✓		✓		✓		✓				
Learning and Innovation Skills	✓	✓	✓	✓		✓			✓	✓		
Manufacturing Skills 1							✓					
Design Elements		✓		✓		✓		✓			✓	✓
Materials and Techniques							✓		✓			

The analysis of the Y1 modules concluded that all modules implicitly mentions either oracy or graphicacy throughout the document. The module ‘Technical Graphics’ is the only module which does not implicitly mention oracy, perhaps due to the graphical nature of this module. The module ‘Manufacturing Skills’ has the least implicit mention of either skills but does refer to oracy in the ‘Teaching and Learning Strategies’ section. Notably the only module in Y1 which explicitly mentions oracy and graphicacy is ‘School Placement 1’ in the ‘Indicative Syllabus’.

Y2 modules included: School Placement 2, Education Projects 2, Design Process 2, Manufacturing Technology 2, Theory of Teaching and Learning, Applied Science, Graphics and Computer Applications and lastly, Materials and Sustainability.

Table 2.12

Explicit and Implicit Oracy and Graphicacy: Year 2

Module Title:	Module Descriptor		Learning Outcomes		Indicative Syllabus		Teaching & Learning Strategies		Assessment/ Repeat Assessment Strategies		Continuous Based Assessment	
	O	G	O	G	O	G	O	G	O	G	O	G
School Placement 2	✓	✓		✓	✓	✓	✓	✓	✓		✓	
Education Projects 2		✓		✓		✓	✓					
Design Process 2		✓	✓	✓	✓	✓				✓		
Theory of Teaching and Learning	✓	✓	✓				✓	✓				
Manufacturing Technology 2												
Applied Science		✓		✓		✓	✓					
Graphics and Computer Applications		✓		✓		✓	✓	✓		✓		
Materials and Sustainability		✓		✓		✓		✓		✓		

Table 2.12 displays the presence of explicit oracy and graphicacy terminology references and implicit elements of both which were evident in Y2 MD. The results from the

analysis of the Y2 MD are quite similar to that of Y1. The module ‘Manufacturing Technology 2’ is the only module in Y2 which does not implicitly or explicitly refer to either skill of oracy or graphicacy. Aside from ‘Materials and Sustainability’ the rest of the modules all at least implicitly mention oracy, and all modules implicitly mention graphicacy. Again, ‘School Placement 2’ is the only module which explicitly mentions oracy and graphicacy in its MD ‘Indicative Syllabus’.

Y3 modules included: School Placement 3, Education Projects 3, Applied Graphics, Education Studies, Curriculum and Assessment and lastly, Architectural Design. Table 2.13 displays the presence of explicit oracy and graphicacy terminology references and implicit elements of both which were evident in the MD.

Table 2.13

Explicit and Implicit Oracy and Graphicacy: Year 3

Module Title:	Module Descriptor		Learning Outcomes		Indicative Syllabus		Teaching & Learning Strategies		Assessment/ Repeat Assessment Strategies		Continuous Based Assessment	
	O	***G***	***O***	***G***	***O***	***G***	***O***	***G***	***O***	***G***	***O***	***G***
School Placement 3		✓	✓	✓	✓	✓						
Education Projects 3			✓		✓	✓						
Applied Graphics		✓		✓		✓		✓				
Education Studies							✓	✓				
Curriculum and Assessment		✓							✓			
Architectural Design				✓		✓						

The analysis of Y3 MD for explicit mention of oracy and graphicacy consideration is overall quite poor, although each MD implicitly refers to some aspect of the skills. The modules ‘Architectural Design’ and ‘Applied Science’ both do not implicitly refer to oracy throughout the document. Overall, no module descriptor in Y3 explicitly refers to skills of oracy or graphicacy.

Y4 modules included: School Placement 4, Dissertation, Advanced Graphics, Professional Studies, and lastly, Building Services and Technology. Table 4 displays the presence of explicit oracy and graphicacy terminology references and implicit elements of both which were evident in the MD.

Table 2.14

Explicit and Implicit Oracy and Graphicacy: Year 4

Module Title:	Module Descriptor		Learning Outcomes		Indicative Syllabus		Teaching & Learning Strategies		Assessment/ Repeat Assessment Strategies		Continuous Based Assessment	
	O	*G*	*O*	*G*	*O*	*G*	*O*	*G*	*O*	*G*	*O*	*G*
School Placement 4			✓	✓	✓	✓						
Dissertation	✓				✓		✓	✓	✓		✓	✓
Advanced Graphics		✓		✓		✓		✓				
Professional Studies	✓		✓		✓	✓	✓	✓	✓		✓	
Building Services and Technology		✓	✓	✓		✓	✓		✓		✓	

Lastly, the analysis of Y4 modules suggests that oracy and graphicacy, although implicitly, are covered quite well in the MD. Similar to the results of Y1, 'Advanced Graphics' does not implicitly or explicitly refer to oracy throughout the document, again possible due to the graphical nature of the module itself. The rest of the modules implicitly refer to each skill in many instances throughout the document. Again, like Y1 and 2 results, 'School Placement 4' is the only module which explicitly mentions oracy and graphicacy, this time in both the 'Learning Outcomes' and the 'Indicative Syllabus'.

Overall, the school placement modules (Y1, Y2 and Y4) are the only modules which explicitly mention oracy and graphicacy. This perhaps is due to the content of this module, as a requirement of school placement students must create lesson plans which should include multimodal teaching approaches and cover literacy, numeracy, oracy, and graphicacy. For that reason, it may be more accepted that oracy and graphicacy are taught explicitly compared to the other modules in Y1 to Y4.

2.7 Conclusion

With a focus on the study objectives one, two, three, and four, this chapter reviewed the literature on the implementation and development of oracy and graphicacy in general as well as in ITE and technical education. To help with the literature analysis and aid in the formulation of important research questions, the literature analysis approach was initially investigated. The literature review revealed a lack of prior research on oracy and graphicacy in the context of ITE or technical education, highlighting the significance and novelty of this work.

The research's objective one was addressed by the findings, which showed that the terms "oracy" and "graphicacy" are not commonly used, frequently misunderstood, or overlooked because literacy and numeracy occupy centre stage. There wasn't a lot of literature on either of these ideas, and the definitions given by various authors varied a lot because neither concept had a widely accepted or precise meaning. The author's definitions for each are provided in Sections 2.3.1 and 2.3.2 and were created by combining several definitions from various writers.

This chapter discussed oracy and graphicacy in relation to ITE and the subject delivery at post-primary level, particularly technical education (objective two). The findings indicated that there is minimal literature on these concepts in Irish post-primary and ITE, highlighting the system's shortcomings in this area. While there were a few instances in which elements of both skills were incorporated into general literacy or numeracy concepts through educational documentation from the NCCA, DES, and the TC, there were insufficient supports or guides to encourage and aid educators on how to improve and incorporate these concepts into the classroom.

Oracy and graphicacy were not evaluable criteria for the WSER and SIR, according to the documented study of those reports (Objective Three). The analysis's findings showed that both ideas were underrepresented in the documents because the vast majority of the reports failed to make either one of them an explicit mention. Technical curricula were also examined, and the findings were similar to those of the WSER and SIR in that appropriate terminology isn't consistently used throughout the publications and that there isn't much mention of distinct oracy aspects, although graphicacy-related aspects were much more obvious. Logical analysis of literature on oracy and graphicacy in Irish education reveals that these skills are misrepresented in the literature. Next, chapter three discusses the research methodology and methods.

Chapter Three. Research Methodology and Methods

3.1 Introduction

This chapter discusses and justifies the methodological choices made in this research study, with reference to literature. Objective five of the research study (outlined in section 1.2) is addressed, namely, to conduct a primary case study within one technical ITE programme, in order to critically assess current levels of oracy and graphicacy knowledge and skills. This section provides an account of the research methodology, research methods, data gathering tools employed in the study, the research ethics considered, as well as the data analysis methodology.

Section 3.2 defines the term research methodology and discusses the research methodology chosen in the study. Research philosophies which underpin social science research (namely, objectivism, interpretivism, constructivism, and pragmatism, etc.,) are clarified and four philosophies are identified as most relevant to the study: positivism, interpretivism, the critical paradigm and pragmatism. Section 3.3 discusses the data gathering process which includes sampling, profiling, research tools, and validity and reliability. Section 3.4 outlines the ethical considerations which is followed by 3.5 the data analysis methodology and lastly 3.6 the conclusion for this chapter.

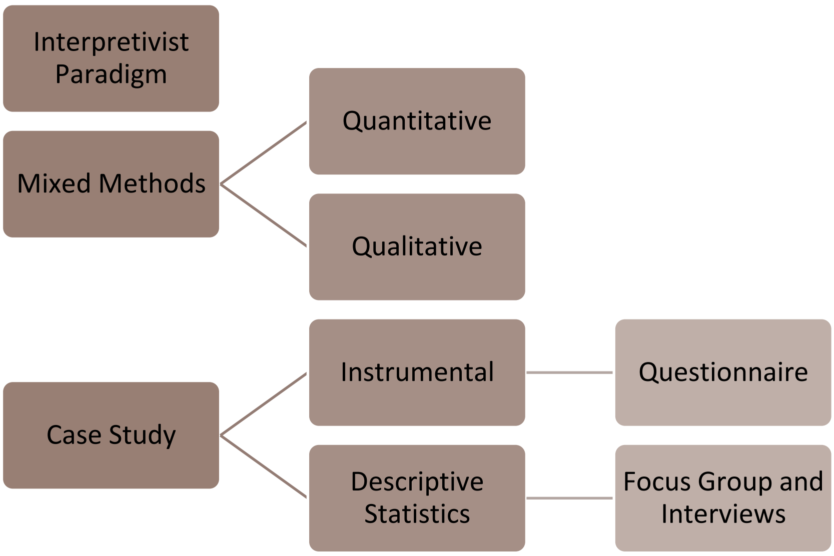
3.2 Research Methodology

Methods and methodology are frequently used interchangeably. In this research study, the term "methods" refers to the approaches used to collect data for inference, interpretation, and explanation. In this case, the methods used to collect data are questionnaires, interviews, and a focus group. However, the aim of the methodology is to help us understand the process of scientific enquiry rather than the products themselves (Cohen et al., 2017).

This section has been described as the most important aspect of a research paper according to (Kallet & Faarc, 2004), as it gives the reader a definite clarification for the rationale behind the strategic choices made in the study, and demonstrates the procedures and techniques taken to respond to the research question. The aim of this section is to investigate a series of components which contribute to a research methodology, namely philosophies, paradigms, strategies, and methods, focusing on commonly used research methodology in education.

Figure 3.1

Research Study Methodology Overview (Author's Original)



As discussed in Figure 3.1, this case study was a mixed methods study designed with an interpretivist philosophical paradigm in mind, and data gathering processes were both descriptive (staff focus group and interviews) and instrumental (PS teacher questionnaires).

3.2.1 Research Philosophy

A research philosophy refers to the method in which beliefs and assumptions are generated to create knowledge (Saunders et al., 2019). The research philosophy forms the basis of the study as it involves choosing a research strategy, formulating a problem, as well as the data collecting process and analysis (Žukauskas et al., 2018). When it comes to selecting the best methodology and methods for a research project, philosophical considerations take precedence over the practicalities of the procedures (Holden & Lynch, 2000). When conducting a research study, the researcher must explore the philosophical underpinnings of a range of research paradigms. According to *Oxford Learner's Dictionaries*, a paradigm is defined as “a typical example or pattern of something” (University, 2021), in research: the method in which a researcher views their study.

The term “paradigm” was first used by Kuhn (1962) to describe a philosophical way of thinking, or as "world-view(s)" (p. 123), as Žukauskas et al. (2018) referred to them. To clearly comprehend the "philosophical, theoretical, instrumental, and methodological foundations" of their study, a researcher must review literature in relation to research paradigms (Žukauskas et al., 2018, p. 123). Kivunja and Kuyini (2017) underline the importance of selecting an acceptable paradigm for a research study by outlining how the research would justify and be led by the "assumptions, beliefs, norms, and values of the chosen paradigm" (p. 27).

There are three main paradigms when dealing with scientific and educational research, namely, the positivist paradigm, the constructivist/ interpretivist paradigm, and the critical paradigm (Cohen et al., 2017; Kivunja & Kuyini, 2017; Scotland, 2012; Taylor & Medina, 2013; Žukauskas et al., 2018), each of which consist of different ontological, epistemological, and methodological beliefs. Before examining the various types of paradigms, the next section will define the terms “ontology”, “epistemology”, and “methodology”.

According to Kivunja et al. (2017) and Scotland (2012), ontology is a discipline of philosophy that is concerned with the presumptions we formulate in order to perceive that something makes sense or is true, as well as the very nature or substance of the social phenomenon we are researching (Kivunja & Kuyini, 2017; Scotland, 2012). Ontological assumptions contribute to framing the way in which we see and study our research (Saunders et al., 2019), it focuses on what already exists and the nature of reality (Žukauskas et al., 2018). Crotty (1998, as cited in Scotland, 2012), defines it simply as the study of being. Ontology raises the questions of "what constitutes reality? Or what is reality?" (p. 9).

Along with our branch of ontology, we have a branch of epistemology. Epistemology derives from the Greek aetiology word "episteme", which translates to mean "knowledge" (Kivunja & Kuyini, 2017, p. 27), and it is concerned with the study of the nature of knowledge (Holden & Lynch, 2000). Epistemological assumptions are involved in the creation, acquisition, and dissemination of knowledge, or "what it means to know" (Scotland, 2012, p. 9). Epistemology utilises questions like "How can we know what we know? (and) What is considered acceptable knowledge?" (Saunders et al., 2019, p. 135). Epistemology concerns itself with what makes up knowledge, the nature and form of knowledge and how it may be acquired and communicated from one human being to another. As a researcher, the ability to comprehend the nature of human knowledge is important, as it can allow you to deepen and broaden your current understanding in your research field (Kivunja & Kuyini, 2017).

Lastly, the term methodology refers to a framework or technique in research that is associated with a certain set of paradigmatic assumptions that are employed when conducting a research study (Kivunja & Kuyini, 2017; O'Leary, 2004, p. 85; Scotland, 2012). The methodology of a study is linked to questions like *Why? What? When? Where?* And *How?* in terms of data gathering and analysis (Scotland, 2012, p. 9). The methodology and methods chosen for your research study must correlate with the pragmatical assumptions mentioned earlier. As a mixed methods study, the methodological paradigms chosen for this research included positivism, in the case of quantitative research, and interpretivism or, more specifically, a constructivist-interpretivism – pertaining to qualitative aspects of the research. It should be noted that there is the possibility of unconscious bias in the questionnaire's construction, as quantitative analysis was used to analyse part of the questionnaire's responses, which is not a guarantee of eliminating bias.

3.2.1.1 Positivist Paradigm

Positivism originated with Auguste Comte in the 19th Century (Cohen et al., 2017), positivism produces “law-like generalisations” through the observation of social reality (Saunders et al., 2019, p. 144). Positivists, according to O’Leary (2004), undertake study through characterizing experiences through observation and measurement in order to forecast and manage the forces around us. Positivism is based off assumptions about social phenomena using the scientific method (O’Leary, 2004, p. 5). Saunders et al. (2019) explained how the term positivism comes from “posited” which means “given”, meaning positivism refers to the importance of what is given, suggesting this methodology yields “data and facts uninfluenced by human interpretation or bias” (Saunders et al., 2019, p. 144).

Positivists believe that there is one reality, and this can be proven through experiment (Patel, 2015). They also believe the world is knowable, predictable, and singular, meaning what we do not know now we will learn in the future, predictable in the sense that there have been laws developed like gravity to predict an outcome and finally a singular reality ad truth which can be applied to all (O’Leary, 2004). Positivism uses typically quantitative methods of analysis as it involves numbers and measurements (Saunders et al., 2019). As this research involves quantitative analysis using numbers and measurements, this paradigm was utilised as it contributed to the design of the student questionnaire which included closed questions which did not need to be interpreted, eliminating biasness.

As an illustration, I evaluated the frequency of keywords used in the definitions of oracy and graphicacy provided by survey participants to determine how closely the definitions of the various cohorts studied were related. To achieve this, specific questions, such those that ask for definitions, were created in a way to elicit only factual, objective information. Avoid asking questions that could lead to subjective, value-based responses, as the subject might respond in order to please the interviewer. For that reason, two paradigms were used in this research study with the intention of balancing the elicitation of objective facts with the provision for subjective explanation, providing for the capacity to cross-check one with the other. The constructivist/ interpretivist paradigm will be discussed next.

3.2.1.2 Constructivist/ Interpretivist Paradigm

Constructivism, which was first introduced by Jean Piaget, was the idea that what we know to be knowledge has an adaptive function (Fosnot, 2005). According to constructivists, people learn and derive meaning through their interactions with ideas and experiences (Mogashoa, 2014). Constructivists believe that meaning is created by humans as they engage and interpret information and that meaning does not exist on its own (O’Leary, 2004).

Constructivist/ interpretivists is a humanist paradigm (Taylor & Medina, 2013) which contrast the views of the positivists as they believe that there is no one reality, they believe that reality must be interpreted (Patel, 2015). Interpretivists understand the world by acknowledging and exploring the culture and historical interpretations of the social world, and constructivists believe that human beings construct meaning as they interact and engage in interpretation (O’Leary, 2004, p. 10). This paradigm is typically seen as an approach to qualitative research (Creswell, 2014). Taylor and Medina (2013) state that when "applied to educational research, this paradigm enables researchers to build rich local understandings of the life-world experiences of teachers and students and of the cultures of classrooms, schools and the communities they serve" (p. 4). Sabharwal (2007) explains how this interpretivist approach "does not believe in making broad conclusions but offers deeper understanding of a particular situation" (p. 583). This constructivist/ interpretivist paradigm has been utilised in this study as it was involved in the development of the lecturer focus group, open-ended questions in the PS teacher questionnaires, and open-ended questions in the interviews with managerial staff (see Appendix 3, 5, 6, & 7). Interpretive approaches provide insight and knowledge of behaviour, explain acts from the perspective of the participants, but do not dominate the participants (Scotland, 2012).

3.2.2 Research Strategy: Case Study

With respect to the research framework or model, a case study was employed. A case study involves the investigation of a distinct, bounded and specific circumstance, that is generalised to illustrate a more universal principle, but not generalised to other specific cases or contexts (Nisbet, 1984, as cited in Cohen et al., 2017). A case study is a method of investigating social elements through comprehensive description and analysis of an individual scenario and often focus on understanding the unity of the case (O'Leary, 2004). Its purpose is to allow readers to understand ideas more clearly, as the case study provides them with "real examples of real people in real situations"(Cohen et al., 2017, p. 253).

This study employs a case study methodology because it fits a case study characteristic. The research study's goal was addressed most successfully using a case study research methodology. Since this research solely evaluates one specific course, the *B.Sc. (Hons.) in Education (Design, Graphics and Construction)*, it is categorized as a case study. For instance, this study is bounded research because of the multiple approaches used in Ireland for teacher education (concurrent programmes and consecutive programmes). Due to this reality and the variations in how the various models integrate education and subject knowledge, it would be impossible to perform a comprehensive study and assert that it would apply to all technical ITE programmes. When compared to similar programmes with larger enrolments, some factors, such as the smaller student body, provide a particular set of circumstances. Similar to this, the information technology culture supports lecturers as the primary material suppliers, as opposed to other Institutes or education providers where the majority of the curriculum is provided by teaching assistants.

The specific case for this study includes first to fourth year pre-service post-primary school technical teachers, technical lecturers, and management staff on the *B. Sc (Honours) in Education (Design, Graphics and Construction)* programme in ATU's Department of Creative Education. This case study involves an in-depth inquiry of the research objectives, focusing on oracy and graphicacy in the education programme. This is an educational study that will be based on applied social science disciplines and will have real-world application. The 'case study' is often known as a methodology, but this is not entirely correct as its true meaning refers to the form and shape of the selected participants in the study, whereas the methodologies can change depending on the case (O'Leary, 2004). An example of some qualitative research methodologies that are linked with case studies within social sciences are: ethnography, phenomenology, and grounded theory, the nature of the research question will determine which methodology is chosen. Case studies often follow a mixed methods research approach which means they employ both qualitative and quantitative data gathering methodologies.

3.2.3 Research Methodology: Mixed Methods

The mixed methods approach employed in this study is discussed in this section. Mixed methods research methodology involves combining quantitative and qualitative research methods in a single study, it was first introduced to counteract the weaknesses of both qualitative only and quantitative only studies (Creswell, 2014).

Quantitative research aligns with a positivist philosophy which means that the study is divided, separating the observer, from the entities being observed which is believed to help eliminate biases as the researcher and the objects of the study are detached (Johnson & Onwuegbuzie, 2004, p. 14). Quantitative purists believe that social science research should have an objectivist conception of social reality (Bryman & Bell, 2011). They argue that time and context do not play a role in the generalizations of data (Nagel, 1986), as this results in more reliable and valid scientific outcomes (Johnson & Onwuegbuzie, 2004).

Quantitative data is usually displayed by means of bar charts, histograms, line graphs, pie charts, stem and leaf diagrams, scatter plots and box plots, which are developed by gathering and using numerical and statistical data (Bryman & Bell, 2011; Cohen et al., 2017; Johnson & Onwuegbuzie, 2004) through measurable data gathering techniques. In quantitative research, a measurement is required for the data that is collected (Bryman & Bell, 2011; Cohen et al., 2017). Three main reasons for this is: to allow the researcher to describe minor differences between people’s opinions on the given question, to give the researcher a consistent device for making judgement and distinctions, and to provide a basis which can be used to show the correlation of the relationships between concepts (Bryman & Bell, 2011).

As early as the 1940's, Lazarsfeld (1944, as cited in Merton and Kendall, 1946) suggested that:

> Social scientists have come to abandon the spurious choice between qualitative and quantitative data; they are concerned rather with that combination of both which makes use of the most vulnerable features of each. The problem becomes one of determining at which points they should adopt the one, and at which the other, approach. (p. 556-557)

Qualitative data consists of words, pictures and icons, which are analysed by using a thematic approach rather than statistical (Bryman & Bell, 2011; O'Leary, 2004). Qualitative data is subjective rather than objective, meaning this category of data focuses on the participants point of view, how they feel, their perceptions and ideas (Cohen et al., 2017; Johnson & Onwuegbuzie, 2004; O'Leary, 2004). The participants in a qualitative research study act as the instruments for the data gathering process, doing so by means of focus groups and interviews (Cohen et al., 2017).

Qualitative purists reject positivism and follow subjectivism, constructivism, and interpretivism paradigms (Bryman & Bell, 2011; Johnson & Onwuegbuzie, 2004; O'Leary, 2004). Subjectivism, constructivism, and interpretivism, are different understandings or assumptions, of how the world operates and how knowledge is created (O'Leary, 2004). Subjectivism is the emphasis on subject elements and subjectivists believe that personal experiences are at the root of factual knowledge (O'Leary, 2004).

According to Charmaz (2000), a constructivist methodology recognizes that categories, concepts, and the theoretical framework of an analysis arise as a result of the researcher's interactions with the subject matter and enquiries into the available data. The qualitative method has many types of methodology, ethnomethodology, phenomenology, ethnography, action research, and subjective, being some of them (Bryman & Bell, 2011; O'Leary, 2004). Qualitative data gathering methods tend to be on a smaller scale in comparison to the quantitative method, and usually consist of interviews, observations, focus groups and document analysis (Bryman & Bell, 2011; Cohen et al., 2017; O'Leary, 2004). Words in qualitative research are emphasised rather than quantified (Bryman & Bell, 2011) this therefore contributes to the research by adding validity, depth, honesty, and rich observational data (Cohen et al., 2017; Johnson & Onwuegbuzie, 2004). These authors also argue for constructivism, idealism, humanism, relativism, hermeneutics, and sometimes post-modernism (Bryman & Bell, 2011; Johnson & Onwuegbuzie, 2004; O'Leary, 2004).

3.3 Data Gathering

This section gives a detailed account of the many elements of the data gathering process, such as, the research participants sampling and profiling, data gathering tools, and validity and reliability.

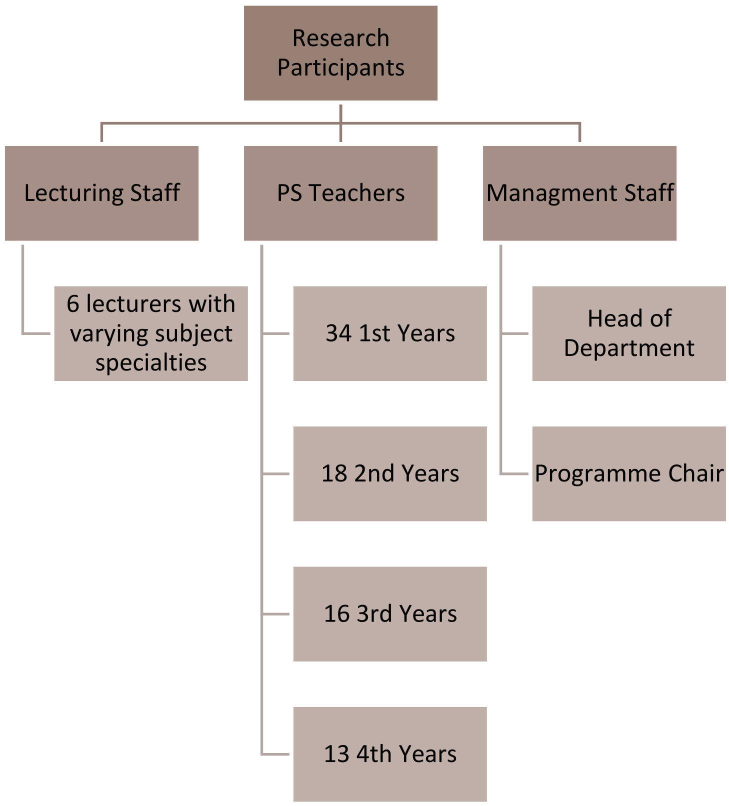
3.3.1 Research Participants: Sampling and Profiling

There are a number of potential sampling models, such as: random, snowball, purposeful and convenience sampling, each of which are more, or less, suited to different research methodologies. The form of research sampling in this case was a combination of both purposeful and convenience sampling, as is appropriate for, case study research. It was purposeful in that the purpose of this research is to enhance an aspect of a selected programme of study; the research participants are the students, staff and managers aligned with the programme. It was also convenience sampling: a part time lecturer on the programme, access to research participants was relatively easy. This selection mirrors the literature. According to Cohen et al. (2013) "it is often the case in qualitative research that non-probability, purposive samples are taken … (where) … emphasis is placed on the uniqueness, the idiographic and exclusive distinctiveness of the phenomenon, group or individuals in question" (p. 161).

Participants were drawn from one ITE programme in Ireland which trained PS teachers in technical education. This study aimed to critically assess current oracy and graphicacy practice on the ITE programme, therefore students, lecturers, and management staff were invited to participate to share their insights and experiences (see Figure 3.2).

Figure 3.2

Research Participants (Author's Original)



Three layers of participants were invited in the hopes to give a rounded view of oracy and graphicacy on the programme. In the case of the PS teachers' questionnaires, the full cohort of students on the case study programme (n=100) was invited to engage, from years one to four of the programme, rather than a select representative sample of the general study population. The response rate out of the overall student population was 81%. Breaking down the responses to year groups: Y1 response rate was 85%, Y2 was 90%, Y3 was 84% and Y4 was 62%. 84% of the PS students surveyed were male (with 1% opting for "prefer not to say" or "other" as their response). This sample profile mirrors the gender imbalance on the programme. As this study is based on a third level university programme the age bracket of the participants ranges from 17 years upwards.

With respect to the qualitative research, the data gathering processes involved two distinct data gathering processes: focus group with a representative sample of six lecturing staff who were contributing to the case study degree programme during the course of this research study, and two semi-structured interviews with managerial staff, at programme and department levels, respectively. The focus group staff members represented different disciplines on the programme: education theory, design, manufacturing, graphics, wood technology, and computer graphics. From the perspective of gender, the six focus group participants were made up of four female lecturers and two male lecturers. And, finally, both managers who were interviewed were males with a technical background.

3.3.2 Questionnaires

The first stage of the study involved the student investigation, which aimed to determine the students' conceptual knowledge and competency in oracy and graphicacy as well as investigate important modules from the ITE programme where they discovered that their oracy and graphicacy skills had improved most. Questionnaires were used as the first data gathering tool when collecting data from student teachers.

Questionnaires are a method of getting information from people by creating and posing questions, questions which can be direct or indirect in nature, to collect answers to our research questions (Gillham, 2008, p. 2). Questionnaires were chosen for this research study as it was deemed an effective way to collect the data. Like any data gathering tool, it has its advantages and disadvantages. Questionnaires are designed to ask questions to find answers, although this is one of its weaknesses, as participants can only answer the questions which are given to them; questions which are designed by the researcher (Gillham, 2008).

Another adverse element that contributes to questionnaires being less accurate is social desirability. This is where participants in the questionnaire choose or give answers which they believe to be more desired by everyone, although the answer they provide may contradict their own initial response (Marsden & Wright, 2010; Patten, 2017). To try and reduce the number of participants providing socially desirable answers, the researcher may design a questionnaire in which all participants' identities are kept anonymous, but unfortunately according to Patten this doesn't always work (Patten, 2017, p. 3). In this study, efforts were made to try and lessen the possibility of social desirability by creating an anonymous questionnaire.

The response rate for questionnaires is known to be quite low (Cohen et al., 2017; O'Leary, 2004; Patten, 2017, p. 2), and because it was not feasible to hold the questionnaire in person owing to the implications of COVID-19, the questionnaire was held online through MS Teams meeting. A PowerPoint was used at the beginning of the meeting for introductory purposes (see Appendix 15). Although not all of the PS teachers were present for the meeting, all of those that were present participated in the research (n= 81) and answered the questionnaire.

When designing a questionnaire as a researcher, it is critical that your questionnaire optimizes rather than satisfies, which means that the participant interprets and understands the question being asked, uses their own knowledge or "memories" for information relevant to the given question, creates a single judgement from this information, and finally translates this judgement into a response to the question (Marsden & Wright, 2010). This four-step process is essential when gathering good quality responses from participants, which brings us on to the questionnaire design. When asked in different ways, questions can gather different forms of data; there are questions that serve different purposes, and it is crucial for the researcher to recognize the numerous types of questions accessible (Brace, 2013).

The PS teacher questionnaire (Appendix 3) was designed and developed online used a number of different question styles such as multiple choice (questions 1, 17, and 20), text boxes (questions 2-5, 11-16, 18, 19, 21-27), ranking (questions 7 and 8), and Likert questions (questions 6, 9, and 10). Many questions required text-style responses, which meant that respondents were free to convey their thoughts and experiences by using their own words rather than being constrained to a single option or rating. Questions which utilised the text boxes includes those which asked participants to share their opinions, experiences, and explanations regarding oracy and graphicacy on the ITE programme or their own personal practice or knowledge.

The choice style questions included yes or no questions which were followed by a question with a text box to allow the respondent to give reason for their initial answer, question 18 and 21 utilised this style and were followed up by questions 19, 20, 22, and 23 depending on the answer given. This style was also used for the gender-based question which gave participants the option of male, female, other, and prefer not to say. Questions Ranking questions were used to rank in order from highest to lowest the modules in which participants found they developed their oracy or graphicacy most to least. Lastly, Likert scales were used predominantly to rate the confidence levels within PS teachers regarding their oracy and graphicacy skill abilities, the options for this scale were: not confident at all, slightly confident, somewhat confident, fairly confident, and very confident. The questions related to personal experiences, opinions, teaching strategies, and definitions of the terms, as well as questions pertaining to the ITE programme which focused on oracy and graphicacy development within the programme modules, and suggestions of improvement.

The question of whether oracy and graphicacy are important in technical education was posed also.

3.3.3 Focus Group

Having conducted an investigation of the students' knowledge and opinions on oracy and graphicacy, the next progression of the research was to investigate the opinions of the lecturing staff, this involved conducting a focus group. The purpose of the focus group with lecturing staff was to discuss the findings from the student questionnaires and to explore oracy and graphicacy skills development from a lecturer's perspective on the programme. The focus group comprised of six lecturing staff on the ITE programme with various specialities. Four members of the focus group were school placement tutors and supervisors, with backgrounds in graphics, education philosophy, computer applications, wood technology, and construction. The other two members of the focus group had backgrounds in visual communication and construction studies, design elements, and dissertation. Having a diverse group of lecturing staff allowed for rich conversation covering many of the different aspects of the undergraduate programme.

One focus group was conducted as a part of this research study. A focus group generally consists of a group of participants, usually between six and twelve, and an interviewer who asks specific questions on a topic of interest (Smithson, 2007). The aim of a focus group is to gather participants with contrasting backgrounds, experiences and beliefs and gain insights on a particular topic, through interaction and discussion with one another (O.Nyumba et al., 2018; Williams & Katz, n.d.). The researcher chooses the group participants, all of which have a common interest, and develops a list of guiding questions on their research topic. The focus group discussion is not a "natural" discussion because of the interviewer steering the conversation, but it is not a restricted interview either, although, focus groups include elements of both (Smithson, 2007).

Due to the implications of COVID-19 it was not possible for the focus group to be held in person, therefore the focus group was held via MS Teams meeting. The process of the focus group included a welcome and introduction to the research study, an overview of the plan for the group session, information was shared regarding the issue of consent to participate in the focus group. The facilitator of the focus group used a PowerPoint (see Appendix 16) and also shared the information leaflet (Appendix 4) which contained the consent form via email with the participants, the facilitator then read through the information leaflet with the group and opened the floor to questions. Once the information leaflet was read and participants were clear of the process, they digitally signed the consent forms and returned them to the facilitator via email. The facilitator then proceeded to ask the group questions from their list of guide questions (see Appendix 5) which they had prepared in advance, to begin the discussion. The questions were delivered in different sections, oracy, graphicacy, initial findings from the student questionnaires, training, assessment, and any additional comments were welcomed at the end before the circle of reflection and thank you note. Following the focus group with lecturing staff on the *B. Sc in Education* programme, managerial staff from the Department were interviewed, namely, the Programme Chair (PC) and the Head of Department (HoD).

3.3.4 Qualitative Interviews

As a natural follow on from the data gathering from PS teachers and lecturing staff, the next phase of research involved qualitative interviews with management staff on the ITE programme. Qualitative interviews were conducted with the HoD and PC for the purpose of investigating their views and experiences with oracy and graphicacy personally and in terms of the ITE programme. The interviews were conducted as a part of the triangulation data collection process for this study, one with the B. Sc in Education programme PC, and the following with ATU’s Department of Creative Education HoD, both of which were held separately. The interviews explored findings from the PS teacher questionnaires and lecturing staff focus group as well as the oracy and graphicacy skills development from a managerial role in the university.

Qualitative interviews allow researchers to gain in-depth insights into the interviewee's unique experiences in a particular area or field (McGrath et al., 2019) and are quite commonly used as a tool for collecting qualitative data in a research study (Jamshed, 2014). For the purpose of this research, two semi-structured interviews were conducted, semi-structured interviews are interviews where the interviewee answers a number of open-ended questions which are predeveloped by the interviewer (see Appendix 5 and 6), this type of interview tends to be more in-depth than an unstructured interview (Jamshed, 2014).

Both interviews were conducted via MS Teams and began with the researcher introducing the study and the rationale for the interview with the interviewees, information about consent was shared and thoroughly explained, and consent forms were digitally signed and returned to the interviewer via email. The interviewer asked participants for permission to record the interview using the "Record" feature on the application, which was approved. According to Jamshed (2014), the recording of interviews proves to be a more effective method of capturing the data over alternative methods such as note taking. Recording can be more reliable as it allows the researcher to focus on the interviewees responses to questions which can encourage the discussion, thus, contributing to a more enriched interview (Jamshed, 2014).

Although qualitative interviews have many positives for inclusion in a research study, they also have a number of weaknesses, one of those being the unreliable source of information due to unconscious bias, this can be caused by interviewees being influenced by the interview process, therefore contributing to unreliable responses (Diefenbach, 2009). To help reduce the likelihood of this occurring, the researcher sent the interviewee a brief summary of the research project (see Appendix 4) via email before the interview process began to ensure the interviewee was aware of what to expect during the discussion. This allowed for trust to be built between interviewer and interviewee, allowing them to establish rapport and comfortable interrelations with one another (McGrath et al., 2019). After discussing the triangulation of data collection tools, the validity and reliability of these methods will be discussed.

3.3.5 Validity and Reliability

To ensure beneficial research is conducted the data gathering methods and tools must be valid and reliable. What is meant by the term “valid”, or “validity” is that the area of investigation, or the research question, must be measured appropriately using a suitable research instrument or tool to ensure it performs for its intended function (Sürücü & Maslakçı, 2020; Taherdoost, 2018). The terms “reliable” or “reliability” in research refer to the results of the research instrument, if the research instrument provides closely related and similar results every time it is used, it would be deemed reliable as it is an accurate result (Crossman, 2019). To ensure the research tools in this study were accepted as being valid and reliable, a number of precautions were made. A triangulation of research tools was used, namely PS teacher questionnaires, a lecturer focus group, and two management interviews, each of these will be discussed in further detail in the following paragraphs.

Triangulation is when more than one method or data sources are used in a study**.** Denzin (1970 as cited in Bryman & Bell, 2011) describes triangulation as using “multiple observers, theoretical perspectives, sources of data, and methodologies” (Bryman & Bell, 2011, p. 397). Researchers may employ triangulation in their research study to seek “convergence and corroboration of results from different methods and designs studying the same phenomenon” (Johnson & Onwuegbuzie, 2004), as it helps contribute to the authenticity of each source (O’Leary, 2004), and the validity and reliability of the study (Cohen et al., 2017). Triangulation is a method often utilised in case studies as it can be used along with data collection methods (O’Leary, 2004) such as mixed methods, which is a combination of both quantitative and qualitative data gathering methods. As mentioned previously, questionnaires, focus groups and interviews were used to gather the primary data. The rationale behind the selection of these methods were 1) the questionnaires were able to collect quantitative as well as qualitative data from PS teachers on the ITE programme, 2) the focus group gathered qualitative data from a range of lecturers with different subject expertise, and 3) the management interviews collected qualitative data from the PC and HoD. These three methodologies combined to provide a comprehensive view of oracy and graphicacy on the ITE programme, as they sequentially progressed through PS teacher viewpoints, lecturer perspectives, PC perspectives, and HoD perspectives.

The term “pilot study” is often used in social science to describe a study that uses a selected sample from the test group to trial an inquiry protocol, in this case a questionnaire, prior to the major study, to determine its feasibility (Anderson & Arsenault, 1998; Teijlingen & Hundley, 2001). Pilot studies ensure that the questions in the questionnaire are fit for purpose, that the questionnaire process functions adequately, and may also help identify potential practical problems in the research procedure (Bryman & Bell, 2011; Teijlingen & Hundley, 2001). At the beginning of the 2020 academic year, class representatives from each year group were selected. Two students for Y1, one student for years two and three, and two students for Y4. Six of these class representatives were invited to participate in the pilot study for the questionnaire through MS Teams and MS Forms applications. These students were chosen as they were the class representatives from each year group which were to participate in the case study. Some of these students were not known to me but had an understanding that I am a recent graduate and co-lecturer on some education programmes in ATU throughout my Master’s research.

Class representatives were invited to participate in the pilot study during their free time through email with a MS Teams meeting invitation. The email explained why they were chosen to take part in the pilot study and explained that it was a voluntary decision. They were given an overview of the purpose of the research study and an outline of what to expect from the pilot study process. Once all six students accepted to take part, a time and date was arranged to suit all four groups. As COVID-19 has influenced the closures of colleges and schools across Ireland from March 2020, the questionnaires had to be completed online. As the students joined the live meeting, the Participant Information Leaflet (see Appendix 4) which outlined all the details of the study and questionnaire was explained thoroughly as well as the Informed Consent Form (see Appendix 4), both of which were emailed to each student before the meeting. They were asked to read through both forms and report any confusions or misunderstandings, but no issues were recorded. The MS Forms link was shared to the students through the chat feature on MS Teams where they gained access to the questionnaire. The questions were read aloud as the students answered the questions on their own personal devices, questions were welcome. Once the questionnaire was completed and submitted the students were asked if they had any issues with the question phrasing, timeframe, and any other difficulties with the questionnaire. The students had no issues with the questionnaire and said it was clear and easily understood.

MS Forms automatically recorded the time it took each student to complete the questionnaire. The meeting was originally scheduled for 30 minutes, with 10 minutes set aside for a welcome and introduction speech, as well as discussion of the study's purpose and informed consent sheet. The questionnaire was supposed to be completed in 20 minutes, with the last few minutes spent thanking the students for their time and participation. According to the pilot study, 30 minutes was insufficient time to complete everything thoroughly, as the questionnaire took an average of 23 minutes to complete, and the Participant Information Leaflet with Informed Consent Form took approximately 15 minutes to complete. This pilot only included a small sample of students; it was clear from the questionnaire that a larger number of participants would necessitate more time, as some year groups had 34 participants. Following the pilot study's findings, extra time was set aside for the researcher and the PS teachers to complete the introduction, read the participation information leaflet, digitally sign the informed consent form, and finally complete the questionnaire. Having considered the data collection methods and procedures as well as the validity and reliability of these data collection tools, the following section outlines the data analysis methodologies which were utilised in this research study.

3.4 Research Ethics

The term ethics is concerned with moral principles and judgements which govern our opinions on others' behaviour (Adhikari, 2020). Ethics does not only focus on issues regarding human beings, but ethics is also concerned with the conservation of the environment simultaneously (Howe & Moses, 1999). Data is frequently obtained from people in social science research, which raises ethical considerations about how the data is collected and how the researcher treats them during this process (Oliver, 2003). It is the researcher's responsibility to protect the dignity of the participants in their study, for that to happen researchers must have a good understanding of the effects of the research on participants (Cohen et al., 2017). There are rules in place which are encouraged to be utilised in a research study to help preserve the integrity of the research process, these rules are referred to as ethical and morality principles (Ichendu, 2020). Morality is described by Ichendu (2020) as the behavioral conviction in right and wrong, whereas ethics is the way of understanding morality, or, right and wrong (Hickey D. C., 2018). The World Conferences on Research Integrity Foundation (WCRIF) have produced four consensus documents, namely, *The Singapore Statement* (2010), *The Montreal Statement* (2013), *Amsterdam Agenda* (2017), and *Hong Kong Principles* (2019). These documents were developed in hopes to provide a comprehensive set of standards and policies regarding research integrity worldwide, each of which focus on different aspects of integrity. The WCRI is a global foundation which was established in July 2017, with a purpose to promote research integrity through ongoing development of the World Conferences and activities

(WCRI, 2021). Before the foundation was officially established conferences were held globally regarding research integrity.

The *Singapore Statement* (2010) focuses on the principles and responsibilities as a researcher, the *Montreal Statement* (2013) is concerned with the responsibilities of individual and institutional partners in cross-boundary research collaborations, the *Amsterdam Agenda* (2017) provides a registry for research on the responsible conduct of research, and the *Hong Kong principles* (2019) reward the implementation of trustworthy research (see Table 3.1).

Table 3.1

World Conferences of Research Integrity (Author's Original)

World Conferences on Research Integrity (WCRI)			
Listing	Location	Theme	Year
1st	Lisbon, Portugal	Fostering Responsible Research	October 2007
2nd	Singapore, Asia	Leadership Challenges and Responses	July 2010
3rd	Montreal, Canada	Research Integrity in Cross-Boundary Research Collaborations	May 2013
4th	Rio De Janeiro, Brazil	Research Rewards and Integrity: Improving Systems to Promote Responsible Research.	June 2015
5th	Amsterdam, Netherlands	Transparency and Accountability	May 2017
World Conferences on Research Integrity Foundation Established			July 2017
6th	Hong Kong, China	New Challenges for Research Integrity	June 2019
7th	Capetown, South Africa	Fostering Research Integrity in an Unequal World	May/June 2022

The *Singapore Statement* (2010) provides a framework for researchers which includes four key principles: 1) honesty in all aspects of research, 2) accountability in the conduct of research, 3) professional courtesy and fairness in working with others, and 4) good stewardship of research on behalf of others. These four principles are the foundations upon which the fourteen responsibilities are built. See Table 3.2.

The principles and responsibilities listed in Table 3.2 are fundamental to the integrity of research. Although there can be global or institutional differences on how research is conducted, these principles and responsibilities can be adapted to guide the integrity of the research study to ensure the research is valued (WCRIF, 2010). The *Singapore Statement* (2010) does not represent the official documents or policies of all countries or organisations; therefore, it is important for the researcher to explore the legal requirements and boundaries relating to their study before conducting their research.

Table 3.2

Singapore Statement Responsibilities (adapted from 2nd World Conference of Research Integrity, 2010)

Singapore Statement Responsibilities (2010)	
1. Integrity	8. Peer Review
2. Adherence to Regulations	9. Conflict of Interest
3. Research Methods	10. Public Communication
4. Research Records	11. Reporting Irresponsible Research Practices
5. Research Findings	12. Responding to Irresponsible Research Practices
6. Authorship	13. Research Environments
7. Publication Acknowledgement	14. Societal Considerations

The principles and responsibilities listed in Table 3.2 are fundamental to the integrity of research. Although there can be global or institutional differences on how research is conducted, these principles and responsibilities can be adapted to guide the integrity of the research study to ensure the research is valued (WCRIF, 2010). The *Singapore Statement* (2010) does not represent the official documents or policies of all countries or organisations; therefore, it is important for the researcher to explore the legal requirements

and boundaries relating to their study before conducting their research. Before exploring the principles and practices of this research study, the following section will examine the definition of important terms, ethical values and principles.

3.4.1 Ethical Values and Principles

A universal guide to ethical principles which should be considered in a research project include autonomy, free and informed consent, veracity, respect for vulnerable persons, privacy and confidentiality, justice and inclusiveness, and harms and benefits (Hickey C. , 2018). It is important for a researcher to familiarise themselves with the ethical values which underpin their research project. Ethical values ensure the research respects, protects, serves, and helps others, and are not limited to personal interests as they often cover much more (Thornton, 2015).

Table 3.3

Ethics and Values adapted from (adapted from Core Differences, n.d.)

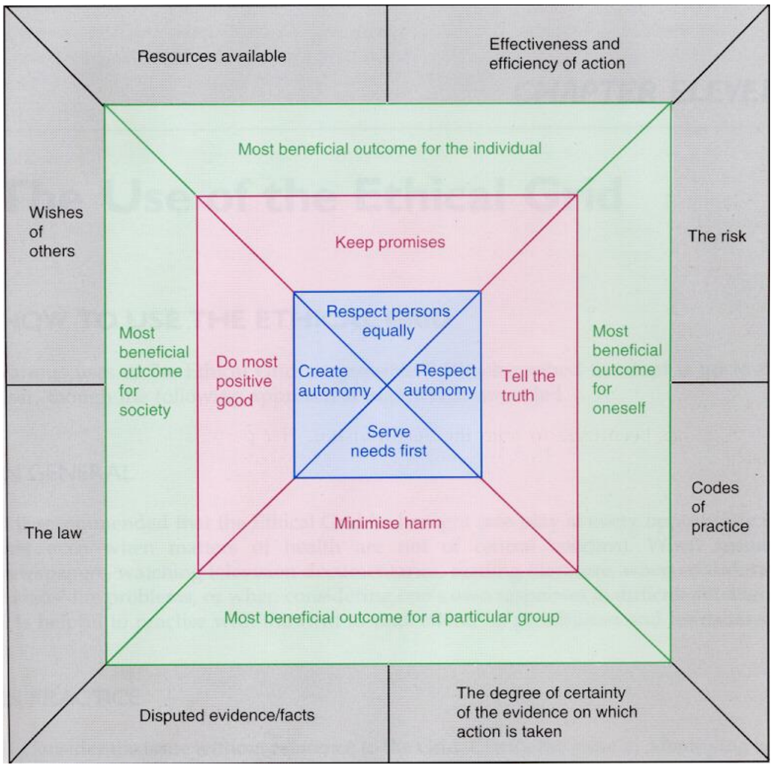
Basic Terms	Ethics (Morality)	Values
Meaning	Set of morals that determine the morality of a person	Set of standards and principles that determine priority
Personal vs Professional	Professional	Personal
Influence	Professions, organisations, and institutes	Family background, culture, religion, community
Variation	According to profession	According to individuals
Determines	Rightness or wrongness	Level of importance
Consistency	Uniform	Differs from person to person
What does it do?	Constrains	Motivates
What are they?	System of moral principles	Stimuli for thinking
Examples	Honesty, integrity, punctuality, and loyalty	Likes, dislikes, perspectives, prejudices, and judgment

Knowing about all of the ethical concepts is crucial for researchers because it helps them comprehend what is ethically right and wrong from various perspectives (Ichendu, 2020). Since this research is aligned with social sciences and involved collaboration between the researcher and study participants, it was critical that ethical values such as trust, accountability, respect, and fairness were considered throughout the study.

Stutchbury and Fox (2009) explain how *Seedhouse's Ethical Grid* (1998) is a tool which originally was designed for healthcare but has been used by social scientists to understand ethical issues (Stutchbury & Fox, 2009). It was created to help users discover problems and respond methodically by directing their thoughts and knowledge. The ethical grid is made up of four layers: core rational (blue), deontological layer (red), consequential layer (green), and the external considerations (grey) (Pakunwanich, 2020), see Figure 3.3.

Figure 3.3

Seedhouse's Ethical Grid (adapted from Seedhouse, 1998)



Each layer of the ethical grid represents different aspects, and each aspect approaches a different perspective. The external issues of the research, as well as the context in which it is found, are considered in the outer layer of *Seedhouse's Ethical Grid* (1998). The following layer seeks to find the most beneficial outcome of the researcher's choices, which will benefit society, individuals, groups, and oneself. The third layer addresses issues of accountability and research methodology. Finally, the inner core layer refers to the participants in the study, ensuring autonomy and respect.

This study was carried out in accordance with GMIT's *Research Ethics Policy* (2010), which takes into account ten general ethical principles and aims to protect the well-being of all individuals and animals involved in the study. These principles are:

1. The promotion of honesty, openness, and fairness in the conduct of research for the benefit of all stakeholders and in the dissemination of research outcomes.
2. The promotion of professionalism, transparency, and accountability of researchers.
3. Respect for confidentiality of data on human subjects.
4. Respect for the appropriate confidentiality of commercial information supplied to researchers.
5. Identification of possible conflicts of interest whether financial, legal or personal between the researchers, the Institute and any external person or bodies.
6. Promotion of best practice in research.
7. Proper acknowledgement of the role of all involved in the research,
8. Respect and consideration of the broader social and cultural implications of research.
9. Recognition that questions of equity and morality arise in who should receive the benefits of research and who should accept its burdens.

10. Acceptance of the principle that the benefits of research should be maximised, and the possible harms should be minimised.

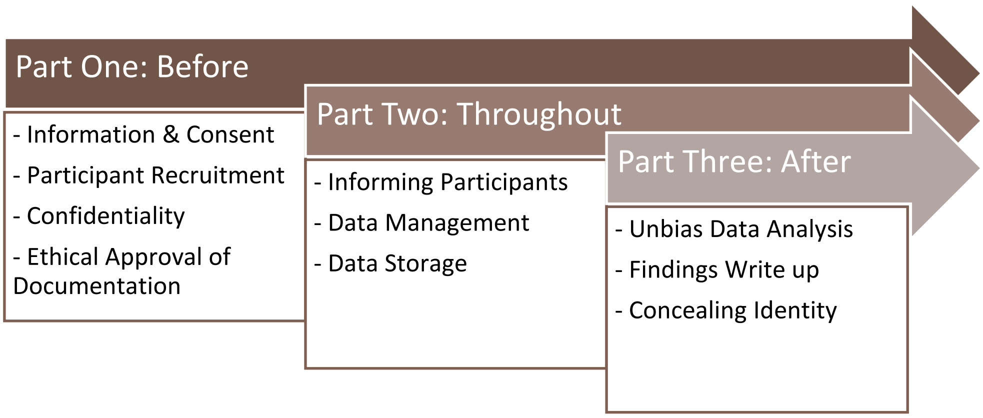
Having explored ethical values and principles, the following section will discuss the ethical practices that have been considered for this study.

3.4.2 Practices

Ethical practice entails the researcher modelling best practice ethical behaviour throughout the research process by applying principles and values to decision making (Russell, 2022). When conducting both primary and secondary research, ethical principles must be considered throughout the process, from start to end. The ethical practices taken in this study will be discussed in three parts, part one will discuss the practices taken before the data gathering phase, part two will discuss during the data gathering phase, and lastly part three will discuss the practices used after the data has been collected.

Figure 3.4

Data Gathering Ethical Considerations (Author's Original)



Part one, before the data collecting phase involved creating an information leaflet and consent form for the participants of the study. Informed Consent forms help to protect and respect the freedom of choice by putting some of the responsibility on the participant if something goes wrong during the research (Cohen et al., 2017).

For this research the information leaflet and consent form was in a digital format using MS Word, one year group (Y1) was given printed information leaflets and consent forms. These forms required the participant to tick the box and sign either electronically or physically to agree to participate in the study, the forms reassured participants that it was a confidential and anonymous study as maintaining this is a requirement of a researcher (Ichendu, 2020, p. 173). As all data collection occurred online, the participants were given informed consent as the information was given two ways, orally and in writing. Participants were assured that they could withdraw at any time during the study and were asked to tick a box on the consent form, followed by either an electronic or physical signature. Because of the implications of COVID-19, this phase took place entirely online, thus the researcher had to email class representatives from Y1 to Y4, lecturing staff, and managerial staff to arrange convenient times for the surveys, focus groups, and interviews.

When approaching the class representatives, the researcher made certain that the data collection did not interfere with the participants' class time with lecturers. In regards to the confidentiality and anonymity of the responses from the questionnaires, the questionnaire was designed using MS Forms in which did not record names or email addresses of the respondees. In terms of the focus group and management interviews, the names of staff were coded to protect their identity, although the research was aware of the participants names. Ethical approval was saught and approved by GMIT's Research Sub Committee of Academic Council, this involved sharing: 1) the Participant Information Leaflet, 2) Informed Consent Forms, and 3) the PS Teacher Questionnaires (see Appendix 3 & 4). Once the participants were recruited, the information leaflets, consent forms, and questionnaires were approved by the Research Sub Committee it was time to debrief the participants and collect the data.

Part two, throughout the data collection phase there were a number of ethical practices which were utilised, such as conveying information from the Participant Information Leaflet and Consent Forms, the process of managing the data in a secure manner, and finally, storing the data. It was important that before participants partook in the questionnaire, focus group, or interviews that they were given the opportunity to ask any questions they may have had, it was during this time that the researcher gave participants contact details if needed to withdraw from the sudy. As stated earlier, MS Forms did not record PS teacher's names or email addresses through the responses, the focus group and interview participants were known to the researcher although time was taken to ensure all names were coded to ensure the identities of the members were anonymous. Once the data was collected online, the data was downloaded and stored to the researchers desktop where it was then placed in a secure folder which was protected by a password only known to the researcher.

Lastly, part three involved the write up of the primary data and findings. Ethical practices throughout this phase involved unbiasness and honesty from the researchers behalf when analysing and writing up the findings. It was important that the codes that were used to mask the identity of participants were accurate and followed through the study. To compare the outcomes of the coding process and to guarantee reliability and validity when coding the qualitative data from the focus groups and interviews, a second coder was included in the thematic analysis, section 3.6 discusses this further. As a researcher it is your responsibility to analyse and present the thoughts and feelings of participants in an unbiased manner, and to reserve the dignity of the participants as humans (Cohen et al., 2017).

3.5 Data Analysis Methodology: Descriptive Statistics and Graphics

Data analysis involves a considered and thorough investigation of data, and interpretations of same, to answer prior research questions. Data analysis methodologies must be demonstrated to be systematic, robust, trustworthy and valid, and researchers must document the process by which the data analysis was carried out, hence the following account of the process undertaken (Nowell et al., 2017). Research must be conducted and analysed in a rigorous, trustworthy and systematic manner to produce meaningful results (Adler, 2022; Nowell, Norris, White, & Moules, 2017). There are many different analytical methodologies which can be used when analysing qualitative and quantitative data such as, descriptive statistics, inferential analysis, content analysis, narrative analysis, discourse analysis, thematic analysis, grounded theory, and interpretive phenomenological analysis (Warren, 2020; EDUCBA, 2020). This aim of this section is to outline and justify the approach taken in this study and to provide a faithful and reliable account of the data analysis methodological approach employed.

The approach taken to quantitative statistical data was predominantly that of 'descriptive statistics and graphics'. Descriptive statistics, and its corresponding graphical representations, were employed in order to facilitate a summary presentation of the questionnaire quantitative data, in a simplified, coherent and clear manner. According to Rawat (2021), descriptive analysis helps to identify commonalities among the data and can be presented numerically as a percentage, weight measurement, average, or frequency. In the process of descriptive statistics, patterns are identified, and summary positions presented, for the purposes of sense-making. There is no claim in this process to generalisation beyond the immediate research study – a position which contrasts with an alternative quantitative analysis methodology of 'inferential statistics'. Given that this is a case study an inferential approach was eliminated.

In this study graphical representations of data were automatically generated by the MS Forms questionnaire and manually enhanced with the aid of MS Excel. Where quantitative data is presented in this chapter (Sections 4.2.1) a concise factual statistical commentary is provided initially, followed by the qualitative findings in section 4.6 which provide a supplementary interpretation of the research participants' quantitative statements.

According to Samuels (2020) there are many stages involved in quantitative research and analysing quantitative data, the stages that were applied in this research study can be seen in Table 3.4. Stages one to three are addressed in the previous chapters two and three. This chapter focuses on stages four to six.

Table 3.4

Stages Involved in Quantitative Research: Descriptive Statistics (Adapted from Samuels 2020).

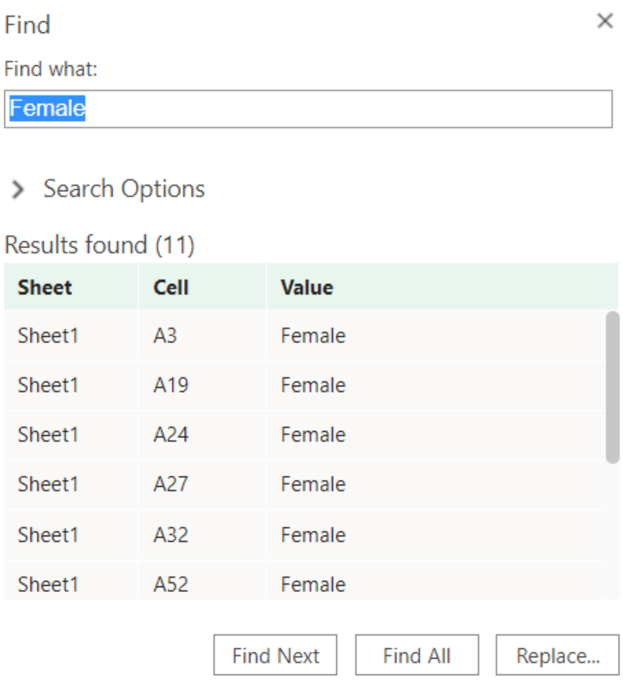
Stage	Description
1	Define your aim and research questions.
2	Conduct a literature review.
3	Primary Data Research: establish a conceptual framework and use it to design a data collection tool to collect primary data.
4	Process your data set and prepare it for analysis.
5	Conduct an exploratory analysis using descriptive statistics and an informal interpretation.
6	Report on your findings.

The questionnaires were conducted online using MS Forms which auto-generated graphical statistical representations of the raw data- in the forms of pie charts and bar charts predominantly (see Appendix 8- 12 for examples). Following this, to assist a deeper analysis, data was downloaded in MS Excel spreadsheet format. Each PS teacher year (one to four) was given a different questionnaire to suit the modules of their year of study, this meant that a total of four MS Excel spreadsheets were downloaded onto the desktop. A separate comprehensive MS Excel spreadsheet was created and the results from each question, from each year, was copied and pasted onto the new separate spreadsheet, in line with stages four and five in Table 3.4. Each question from the questionnaire was given a separate tab, maximising the organisation of data and making it ready for analysis.

Frequency analysis was applied to establish weightings. The questionnaires included both nominal and ordinal data as it included Likert scales, multiple choice, rating, and ranking questions. To aid in the analysis process the MS Excel “Find” feature was used when calculating the frequency of a choice, for example, question 1 asked the cohort “What is your gender?”, the term “female” was inputted into the “find what:” bar and searched for. The results found 11 cells which contained that value, which meant 11 participants responded with the choice “female”. For reference, an extract was taken of the “find” feature and is displayed in Figure 3.5.

Figure 3.5

Gender Frequency Search (Author’s Original)

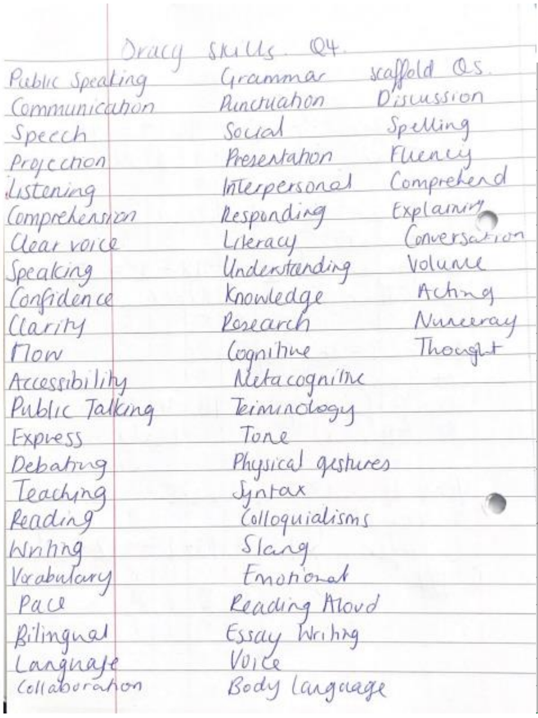


The numbers gathered from these results were collated in a table and charts were created using MS Excel “recommended charts” feature. For questions that were not closed (for example, asking the PS teachers to list skills) the researcher examined the responses making notes of the key terms and then tallied the frequencies on MS Excel. Figure 3.6 demonstrates this process.

Following this, skills were ranked by frequency, highest to lowest, and a chart was generated that including the top 10 skills identified, again using MS Excel. The questionnaire's quantitative and qualitative questions were both analysed using descriptive statistics, which were displayed visually using a variety of tables and charts, making the data easier to understand.

Figure 3.6

Process of Analysing Key Terms and Excel Frequency Table (Author's Original)


Oracy Skills Q4
Public Speaking
Communication
Speech
Projection
Listening
Comprehension
Clear voice
Speaking
Confidence
Clarity
Flow
Accessibility
Public Talking
Express
Debating
Teaching
Reading
Writing
Vocabulary
Pace
Bilingual
Language
Collaboration
Grammar
Punctuation
Social
Presentation
Interpersonal
Responding
Literacy
Understanding
Knowledge
Research
Cognitive
Metacognitive
Terminology
Tone
Physical gestures
Syntax
Colloquialisms
Slang
Emotional
Reading Aloud
Essay Writing
Voice
Body language
scaffold Qs
Discussion
Spelling
Fluency
Comprehend
Explaining
Conversation
Volume
Acting
Numeracy
Thought

	1st Year	2nd Year	3rd Year	4th Year	
Public Speaking/ Talking/ Speech/ Speaking	16	8	5	3	32
Communication	4	6	5	6	21
Listening	7	6	4	1	18
Clear voice/ Clarity	6	2	2	3	13
Social/ Interpersonal		2	3	4	9
Confidence	2	2	2	2	8
Expression/ Express	1	2	1	3	7
Grammar/ Punctuation/ Syntax/ Spelling	2	1	2	2	7
Explaining	4	1	1		6
Reading/ Reading Aloud	3	1		1	5
Discussion/ Conversation	3	1	0	1	5
Projection/ Volume	4	0	0	0	4
Comprehension/ Understanding	1	2	1	0	4
Flow/ Fluent/ Speed	0	1	0	3	4
Debating	2	0	1	1	4

Having explained the processes of descriptive analysis and frequency analysis employed, using MS tools, the following section 3.6 will discuss the thematic and inductive coding data analysis approach used to examine the qualitative data.

3.6 Data Analysis Methodology: Thematic Approach & Inductive Coding

This section explores the analytical methodology chosen to examine the qualitative data from the focus group and interviews. The methods that will be discussed are thematic approach (Section 3.6.1) and inductive coding (Section 3.6.2), respectively.

3.6.1 Thematic Approach

Thematic analysis is a systematic method of data analysis used by researchers to identify, explore, and interpret recurring patterns in the data. This study designed and employed a model of thematic analysis adapted from Braun & Clarke (2006; 2012; 2017). According to these authors, thematic analysis, as a methodology, is a useful way of finding common opinions and viewpoints in the data and it assists the researcher in making sense of the data (Braun & Clarke, 2012). One of the many advantages of utilising this methodology is the flexibility of the approach when used to analyse a range of data collection methods (Clarke & Braun, 2017; Barkley, 2021) particularly in the area of teaching and learning (Maguire & Delahunt, 2017). A disadvantage of the thematic approach is the limited amount of literature available on how to conduct a thematic analysis in comparison to the greater amount of literature available on other qualitative analysis methods, which can negatively impact on novice researchers (Nowell et al., 2017).

Braun and Clarke (2006) developed a six phase step-by-step guide to complete a thematic analysis, which has been adapted for this study, including: 1) familiariasing yourself with your data, 2) generalising initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the report (see Table 3.5).

Table 3.5

The Six Step-by-Step Phases of Thematic Analysis (Adapted from Braun and Clarke, 2006; 2012; 2016)

No.	Phase	Process Description
1	Familiariasing yourself with your data	This phase involves the reading and re-reading of data, getting familiar its content, and making notes of initial ideas. Transcribing data may be included in this initial step.
2	Generalising initial codes	This phase incudes developing a coding system to highlight key features in the data. These codes or labels must be used throughout all the data. Once the data is coded it can be collated into the relevant codes.
3	Searching for themes	This phase is responsible for the development of potential themes in which the researcher can view the data.
4	Reviewing themes	This phase entails reviewing the themes and determining whether they are appropriate for the entire dataset. A thematic map may be generated.
5	Defining and naming themes	This phase involves ongoing analysis to refine the details and specifications of each theme. It is during this stage that a name must be given to each theme.
6	Reviewing themes	This phase focuses on producing a scholarly report of the analysis. This is done by relating the selected extracts from the data to the research question and literature. This is the final chance for analysis.

Coding is the term given to the process by which key segments are identified and extracted from the data and given a specific word or phrase known as a code, as a preliminary phase to the identification of recurring themes in the literature (Linneberg & Korsgaard, 2019; Saldana, 2016). Saldana (2013) stresses the point that codes and themes are not the same thing, a theme is simply an outcome of coding. Codes are the initial categories that are identified in the data- normally in the form of key phrases- and themes are a higher level of classification- typically short including phrases or words. Locke et al. (2022) compare this process to organizing similar data pieces and placing them into "buckets" (p. 3). An example of a code taken from the data gathered in this research study is “defining oracy as verbal communication” which falls under the subtheme of “Defining Oracy”, which is further categorised under the dominant theme of “Defining Terms”.

There are two types of coding: manual/ traditional coding which involves using non-software analysis processes and tools, such as physical pen and paper, colours or highlights, letters and numbers coding, or the use of applications which organise data only and do not analyse contents automatically (such as MS Excel). In contrast, electronic coding involves the use of a computer-assisted qualitative data analysis software (CAQDAS). Deciding which format to use depends on the researcher's training and experience as well as the needs and/or scale of the study. Basit (2003) suggests that factors such as project size, funds available, and the experience of the researcher can contribute to the decision-making process. (See Table 3.6).

Table 3.6

Manual Vs. Electronic Coding (Adapted from Saldaña, 2013).

Manual Vs. Electronic Coding	
Manual Coding	Electronic Coding
Small scale studies Tools needed: pen, paper, hard-copy documents Applications: MS Word, MS Excel Experience: First-time researcher Time consuming Software literacy non-essential	Large scale studies Tools needed: Computer or electronic device. Applications: AnSWER, ATLAS.ti, HyperRESEARCH Experience: Knowledge of applications Functionality of applications can quickly collect and display the information needed.

There are several advantages to manual coding analysis, according to Bright and O'Connor (2007), including accessibility and availability for everyone since no software is needed, which also makes it more affordable. Manual coding also permits human interpretation of information, which can be more accurate than computer aided analysis

(Bright & O' Connor, 2007). As all of the data for this study was gathered through online MS applications (MS Forms and MS Stream) that assisted in organising the raw data. It was decided to conduct the thematic analysis and coding by means of a manual coding process, assisted by the MS applications employed for data gathering. The scale of this single case study meant that a manual approach was feasible within the timeframe. The manual process ensured that the researcher was fully immersed in, and familiar with the data, and owned the processes of coding and theme generation.

To move beyond the raw data, the data from the questionnaires were downloaded onto a MS Excel spreadsheet for analysis purposes. In the case of the focus group and the interviews, recordings were available via MS Stream and the corresponding transcripts were generated using MS Word's online version "transcribe" feature. These transcriptions were edited manually – for greater accuracy – prior to analysis.

Both deductive and inductive research utilize coding (Locke et al., 2022). Inductive coding is where codes emerge directly from the data by using the participants phrases rather than using terms or vocabulary of the researcher. Taking phrases or information from the participants ensures that the researcher remains open-minded to the data that arises and ensures no information is disregarded (Linneberg & Korsgaard, 2019). In contrast, in deductive coding, instead of the codes emerging directly from the data, an initial list of codes are developed prior to the coding process (Saldaña, 2013). In this research study, a number of areas needed to be investigated, arising from the literature investigation. Dominant themes identified in the literature (Chapter Two) helped structure the design of the questions for the questionnaires, focus group, and interviews. In other words, a deductive approach was employed in the design of the data gathering tools. This same deductive approach was not followed through – in terms of the structuring on the data analysis- since, in coding, impartiality is necessary, and an openness to unanticipated analyses is an academic requirement. An inductive approach facilitates the potentiality for the generation of new and unanticipated codes and/or themes from comparatively unstructured observations (Locke et al., 2022), and can contribute positively to original findings and observations. It was decided to facilitate an inductive approach to the coding of the qualitative data from the focus group and interviews.

3.6.2 Inductive Coding

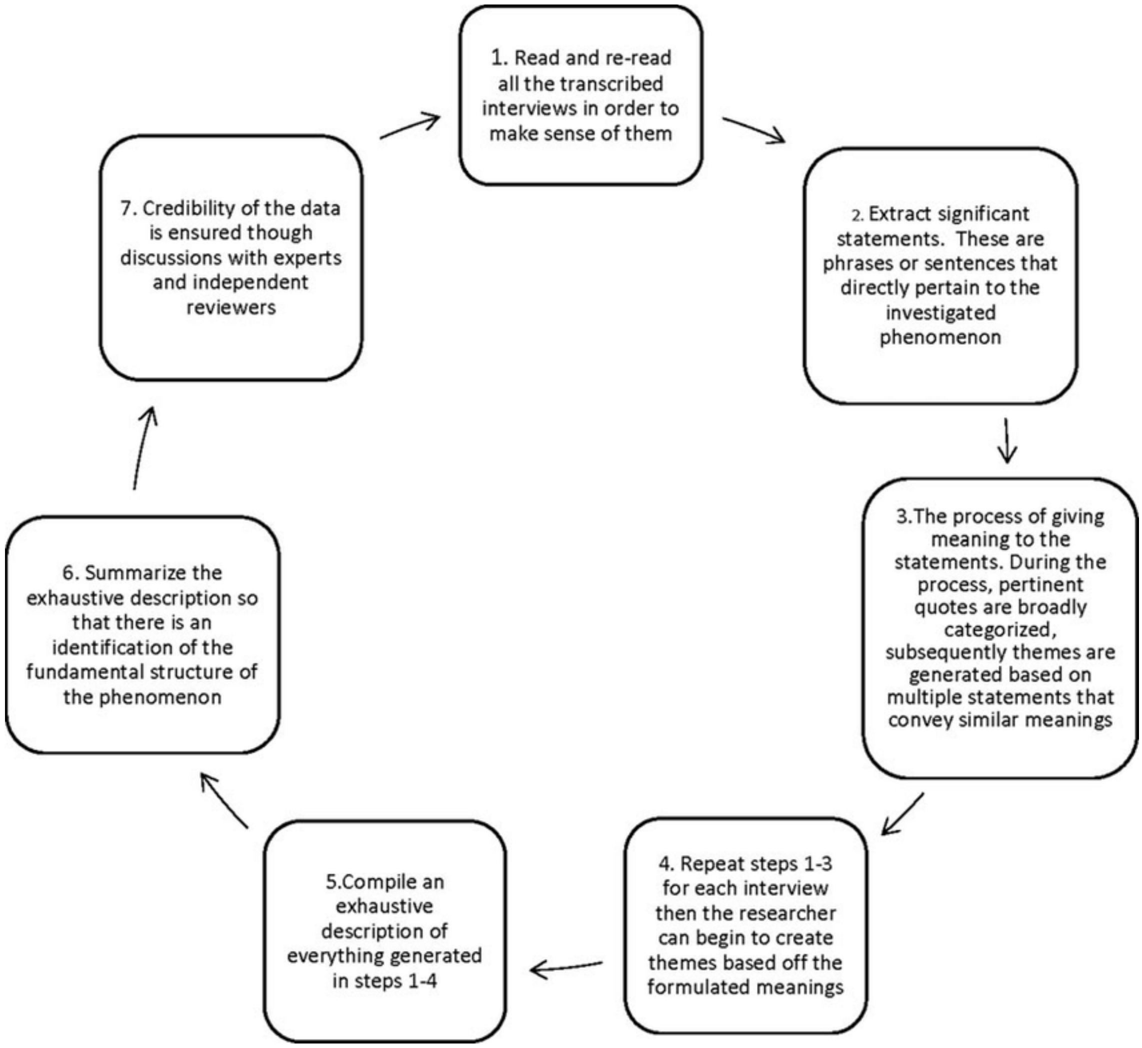
In coding, it is important to keep an open mind in terms of what data arises outside of the chosen initial (deductive) themes, to ensure flexibility and impartiality (Linneberg & Korsgaard, 2019). An inductive approach facilitates the potentiality for the generation of new and unanticipated codes and/or themes, hence original findings and observations. With respect to qualitative data derived from the focus group and interviews, while the prompting questions (see Appendix 5, 6 and 7) were informed by prior literature, documentary and questionnaire analyses, the process was an inductive one: codes and themes were generated from the data by means of a systematic and phased process that incorporated a validation co-coding process by an academic research supervisor.

Once the transcripts were generated, manual coding was used to generate the codes and themes from the transcripts. A modified Colaizzi 'method of phenomenological reduction'- as adapted by Finlayson et al. (2018)- was employed for the purpose of validating and ensuring the analysis process was reliable. This seven-step method for data analysis can be seen in Figure 3.7.

The first step of this process was for the researcher (Coder 1), and research supervisor/validator (Coder 2) to read the focus group transcript to familiarise themselves with the data before the initial codes were generated. Initial coding involved the use of MS Excel where a table was developed for both independent coders.

Figure 3.7

Modified Colaizzi's Seven-Step Method for Data Analysis (Finlayson S. et al/, 2018)



The table had three columns which were named "code", "excerpt", and "page", the excerpt was a significant statement taken from the transcript where it was then given a code and the page number was listed for ease of navigation. Both coders completed their own table for the focus group transcript (see Table 3.7).

Table 3.7

Codes, Excerpts, and Page numbers from Coder 1 and Coder 2 (Author's Original)

CODER 1		
Code	Excerpt	Page
defining oracy - verbal communication	verbal communication in a in a variety of types, and a variety of ways, so communicating, perhaps verbally.	2
defining oracy - communicating thoughts, ideas, feelings	feelings and to be able to sort of capture.That in a way that.Articulates what you're feeling and what you're thinking, and to be able to verbalize that and to be able to communicate that to	2
defining oracy - not what you say, how you say	you're saying it, so your actual mannerisms, your your presentation skills, and as well as well as your ability to.And forma- formulate I suppose, your ideas into kind of an oral way.I mean,	3

CODER 2		
Code	Excerpt	Page
Defining oracy, verbal communication	something to do with verbal communication in a in a variety of types, and a variety of ways, so communicating, perhaps verbally.	2
Defining Oracy, communication of ideas/thoughts verbally for understanding	Your ability to communicate your I suppose your ideas and and your thoughts and your feelings and to be able to sort of capture that in a way that, Articulates what you're feeling and what you're thinking, and to be able to verbalize that and to be able to communicate that to other people so that they get a full understanding of what you're thinking and how you're feeling.	2
Defining Oracy, formulation of ideas orally and presentation skills	you're saying it, so your actual mannerisms, your your presentation skills, and as well as well as your ability to formulate I suppose, your ideas into kind of an oral way. it is how succinct	3

Following this (step three) both tables of codes from coder one and coder two were combined. To facilitate this, a new table was created which had five columns: "coder 1 codes", "coder 2 codes", "adjusted codes", "excerpt", and "page" (see Table 3.8).

Table 3.8

Combined Codes: An Illustration (Author's Original)

COMBINED CODING				
Coder 1 Initial Codes	Coder 2 Initial Codes	Adjusted Code	Excerpt	Page
defining oracy - verbal communication	Defining oracy, verbal communication	defining oracy as verbal communication	something to do with verbal communication in a in a variety of types, and a variety of ways, so	2
defining oracy - communicating thoughts,	Defining Oracy, communication of	defining oracy as the ability to communicate	Your ability to communicate your I suppose your ideas and and your thoughts and your feelings and to be	2
defining oracy - not what you say, how you say	Defining Oracy, formulation of ideas orally	defining oracy as the ability to formulate ideas	it's it's communicating orally, but it's also it's not just what you say about, it's how you're you're saying it,	3

The first two columns "coder 1 codes" and "coder 2 codes", were taken directly from the tables generated at the second step. These were compared and combined. This allowed for the adjustment of codes and code names. Accompanying supportive evidence in the form of short excerpts was included in the fourth column and the location specified in the fifth column.

Table 3.9

Generation of Sub-themes from Codes (Author's Original)

SUBTHEMES			
Defining Oracy	Defining Graphicacy	Oracy Importance	Developing Graphicacy Skills
CODES			
defining oracy as verbal communication	defining graphicacy as the ability to understand visually through symbols, icons, diagrams and maps. Anything that is not verbal or text.	how high oracy capability can perceieve high competency/ knowledge in a specific area	developing graphicacy, Technical Graphics, importance of structuring the learning to cator to develop fundimental graphcacy skills before progressing to more
defining oracy as the ability to communicate ideas and thoughts verbally	defining graphicacy as the ability to comprehend graphically, understanding symbols, problem solving, communicating graphically	lower levels of oracy capability could perceive a lower knowledge competency in a specific area	developing graphicacy, technical graphics, role of using visualisation aids in developing visualisation skills, solidworks, 3d models, real life examples
defining oracy as the ability to formulate ideas and present orally	defining graphicacy as the ability to think, understand and communicate graphically	the importance of oracy capability for debates speeches and presentations, to perceieve a higher level in knowledge content	developing graphicacy, technical drawing, structuring learning, building on understanding of graphical concepts first then connecting them with problem solving.

In Collaizzi's method, the next step in the analysis process (step four) is to repeat steps one to three for *each* transcript. Adapting Collaizzi's method at this step, this study used the co-coder approach for a representative sample and portion of the data, namely, the focus group data transcription. The rationale for adopting two coders for a portion of the analysis was to ensure the analysis process was validated and reliable. By involving as few as two persons in the qualitative research coding process, the perception of the reliability of the research findings is dramatically altered, improving the research quality also (Church et al., 2019). Since correlation between the two coders was very high, the researcher, the co-

coder and the academic research supervisors were confident in regard to the coding quality. Further data sets, namely the interview transcripts, were analysed by the researcher (Coder 1) only. The following step (step five) involved reorganizing the codes in a relational and color-coded manner. The adjusted codes from step three were grouped into larger related categories, and this enabled the generation of higher-level sub-themes, see Table 3.9.

In step six, the subthemes were re-organised according to related dominant themes, namely: 1) defining terms, 2) TLA strategies, 3) benefits for pre-service teachers, and 4) barriers. See Table 3.10.

Table 3.10

Generation of Dominant Themes (Author's Original)

DOMINANT THEMES			
Defining Terms	TLA Strategies	Benefits for Pre-Service Teachers	Barriers
SUBTHEMES			
Defining Oracy	Developing Graphicacy Skills	Oracy Importance	Training
Defining Graphicacy	Developing Oracy Skills	Role of Oracy as a Professional Teacher	Impacting Factors
	Explicitly teaching O + G	Multimodal Teaching Strategies	Disconnect between PS teacher's learning
	Disconnect between PS teacher's learning		Is this OUR job?
	Assessment		
	Implementing O&G ITE Programme		

The seventh and final step, involved discussions between the researcher, Coder 2 and the lead supervisor of the research. The purpose of this discussion amongst researcher and experts was to assure data credibility as well as competent data analysis and interpretation. This final conversation was conducted online through MS Teams. Following through the adapted Colaizzi’s method, four main or dominant themes were ultimately identified: “Defining terminology”, “TLA Strategies”, “Benefits for Pre-Service Teachers” and “Barriers”. This coding process was repeated by the primary researcher for the management interview with the PC and the HoD.

Having outlined in some depth the systematic process of coding, generation of themes and validation, an account of the thematic analysis of the qualitative data follows, organised around the four dominant themes listed above. For consistency and clarity, in each case, an account of the questionnaire results, findings and analysis is followed by an analysis of the M1 and M2. For anonymity purposes, lecturing staff are coded according to the letter L and accompanying numbers (L1, L2, etc.) and managers according to the letter M, HoD (M1) and PC (M2).

3.7 Conclusion

The purpose of this chapter was to discuss and justify the research and analysis methodology, methods and instruments employed in this study, addressing part of research objective five. This study utilized a case study approach congruent with interpretivist and constructivist philosophies to collect data regarding the development of oracy and graphicacy skills within the case study ITE programme- from students, lecturers, and management personnel. This chapter both outlines and explained the reasoning behind the methodological decisions made. Both positivist and interpretivist-constructivist philosophical frameworks were chosen (for the quantitative and qualitative research undertaken, respectively).

To establish validity and reliability, a triangulation of data gathering approaches was employed, including PS teacher questionnaires, a lecturer focus group, and two semi-structured interviews with ITE programme management staff. All of which were conducted online due to COVID-19 implications at the time. Finally, ethical values, principles, and practices were investigated and applied, to ensure research integrity, which included gaining ethical approval for the research tools utilised in this study by GMIT's Research Sub Committee of Academic Council. Having outlined the research methodology, methods and ethics, the following chapter (chapter four) will address the analysis of the research data.

Chapter Four. Questionnaire: Research Findings and Analysis

4.1 Introduction

This chapter addresses objective four of the research study, namely, to critically assess current oracy and graphicacy skills development and practice in a selected post primary ITE case study (see Section 1.2). This chapter presents the findings and an initial analysis of the primary research data relating to the PS students' questionnaires, across years one to four of the case study programme. Following on this, chapter five will focus on the qualitative data from the lecturers' focus group and the management interviews. In this chapter, the term 'findings' is understood as an extension of raw data, namely, the representation of the raw data in an organised and systematic form – graphical and/or lexical – as a precursor to an interpretive analysis and/or discussion. By 'analysis' is meant the interpretation of the results: a process which begins in this chapter and is further elaborated, in discursive form, later in the thesis (Chapter Six). The questionnaires were designed with a mixed-methods study in mind (Section 3.3.2) and sought to generate both quantitative and qualitative data relating to PS teachers' understandings of, and practice of, oracy and graphicacy skills development and practice. With that in mind, both quantitative and qualitative results from the questionnaire are presented in this chapter, in turn.

4.2 Presenting the Research Findings

For ease of presentation, it was decided to begin with the quantitative results and progress to the qualitative results, arising from the questionnaire (Appendix 3). The rationale behind presenting the findings separately - according to quantitative and qualitative data - was simply to organise the data simply and clearly and avoid ambiguity or confusion for the reader. To that end, section 4.2.1 focuses on the quantitative elements of the questionnaire, while section 4.2.2 focuses on the qualitative aspects. To ensure the confidentiality of those who participated in this study, no names were mentioned throughout the findings. Instead, codes were used to identify the participants. The PS teachers were simply noted as “PS teachers”.

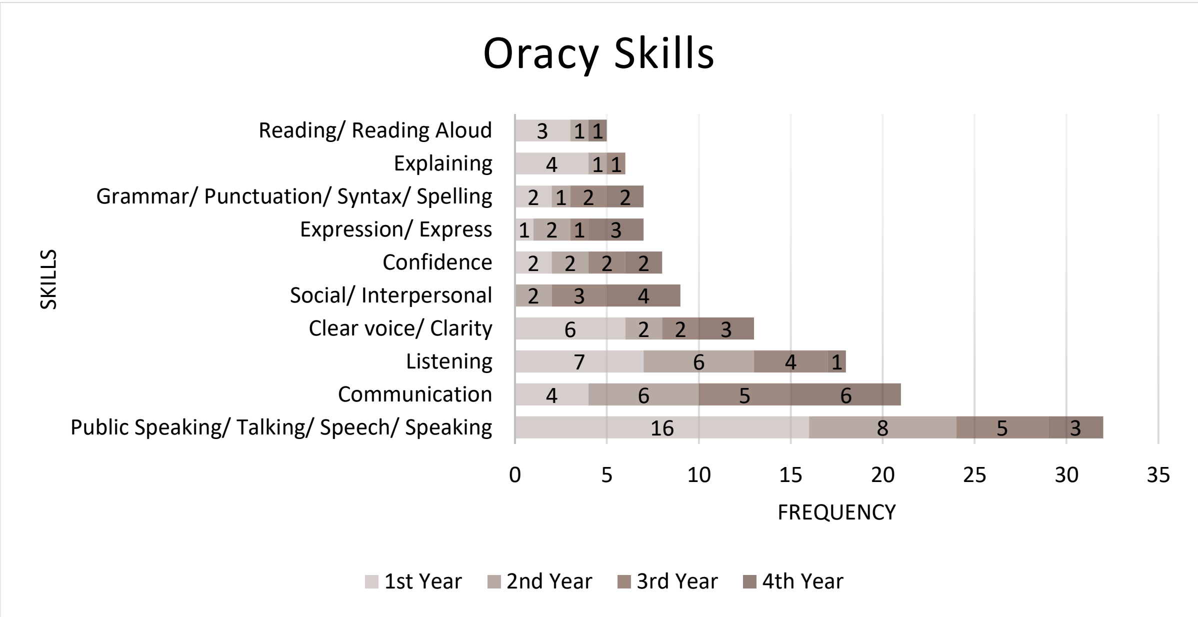
4.2.1 Quantitative Findings

This section reports the quantitative findings from the PS teacher questionnaire. Questions four, five, six, seven, eight, nine, 10, 11, 12, 17, and 20 are the quantitative closed questions and these are displayed in that order below.

The first quantitative question, question four, asked the participants to: “Please list a series of skills related to Oracy”. The most frequent (top 10) answers are displayed in Figure 4.1.

Figure 4.1

Top Ten Skills Related to Oracy: PS Teacher’s View (Author’s Original)

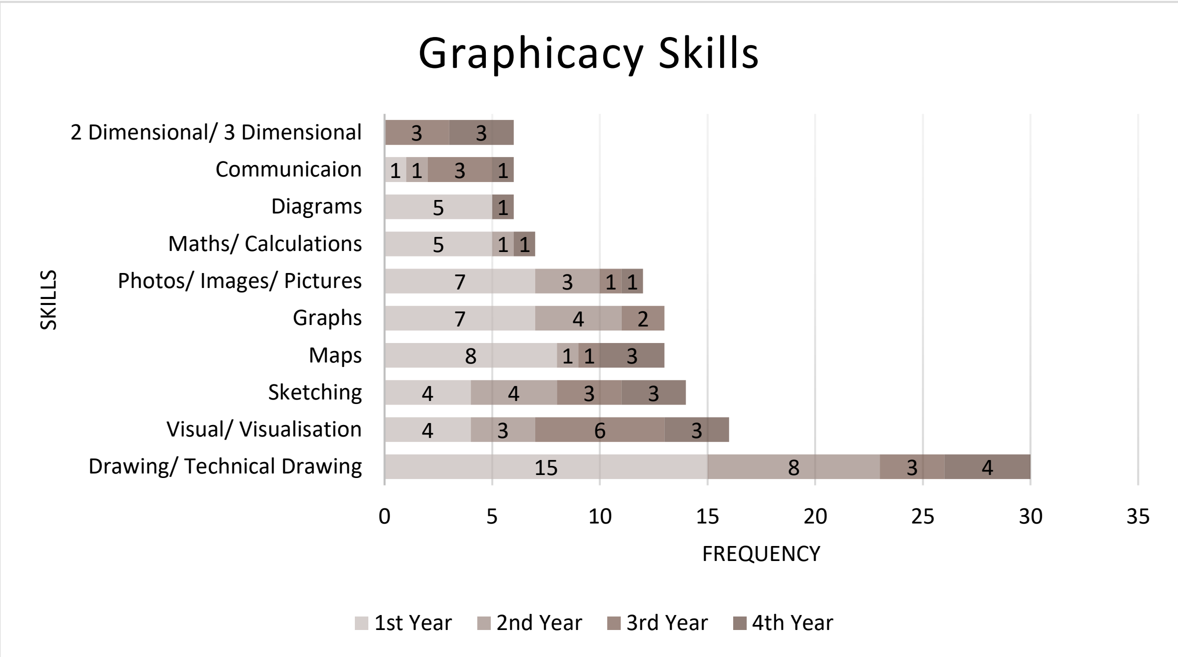


Skills such as ‘public speaking/ talking/ speeches/ speaking’ was the most frequently mentioned category, with at least one of these words being mentioned a total of 32 times. This category of ‘public speaking/ talking/ speeches/ speaking’, was the most frequently mentioned category by years one, two, and three, on the ITE programme, but not Y4. Y4 participants identified more with the broader concept mentioned of 'communication': it was mentioned twice as many times as 'public speaking/ talking/ speeches/ speaking'. Another finding from this question was the number of participants who mentioned the term 'listening' as being a skill of oracy. 'Listening', as an oracy skill, was mentioned a total of 18 times – most often by Y1 participants (n=7), and least often by Y4 participants (n=1).

Question five of the questionnaire asked participants: "Please list a series of skills related to Graphicacy". Their responses are displayed in Figure 4.2. Like question four, the responses from question five were filtered by frequency and the top 10 most frequent skills were displayed in chart form (see Figure 4.2).

Figure 4.2

Top Ten Skills Related to Graphicacy: PS Teacher's View (Author's Original)



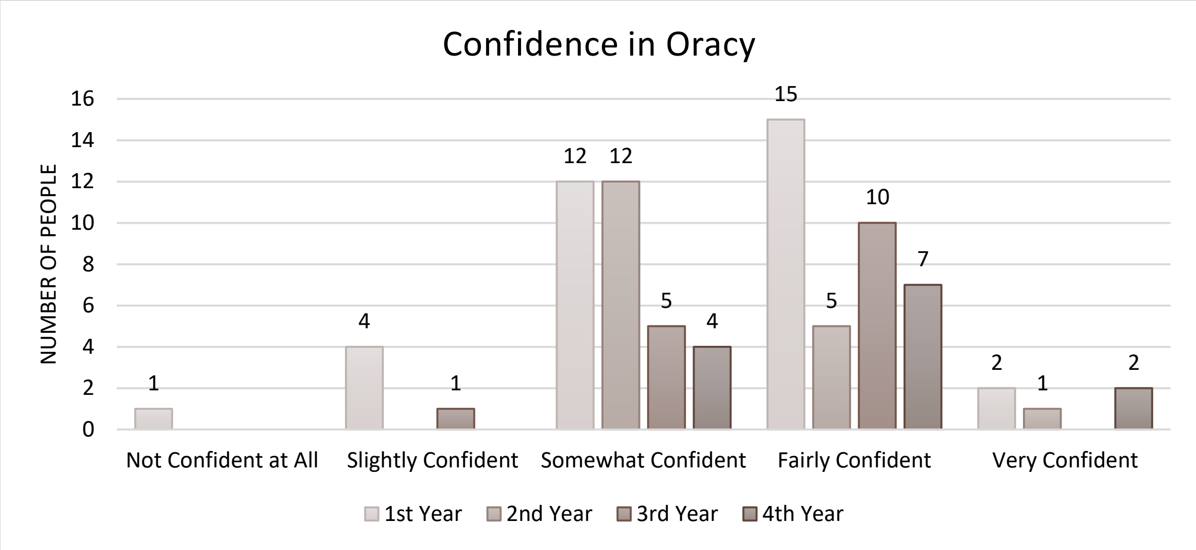
Years one, two and four listed the skill of 'drawing/ technical drawing' the most in their responses to this question, although this was not the case for Y3. The skill of ‘visualisation’ was the most frequently mentioned skill of graphicacy according to Y3 and was one of the second most frequently mentioned skills by Y4. When comparing years one and two with years three and four, years one and two mentioned the skill of visualisation much less frequently in comparison to years three and four. They listed ‘visual/ visualisation’ as their second and third least frequent choices out of the top 10 listed. The skill of ‘sketching’ ranked third out of the overall 10 skills with a total of 16 mentions throughout all year groups.

Years one, two, and four made links between graphicacy and numeracy as they mention skills such as ‘calculations’ and ‘maths’. In contrast, this link to numeracy was not evidenced in Y3 their responses to this question: it was not mentioned by this cohort. The ability to communicate, or the skill of communication, was ranked on the lower end of the frequency scale throughout all years (n=6). It was cited most frequently by Y3 students (n=3); the other groups mentioning ‘communication’ just once each (n=1). Another finding from the responses to this question was the relatively low number of students who listed or mentioned two- or three-dimensional skills (n=6): three of these mentions were by Y3 students and three by Y4 students.

Question six of the questionnaire asked the students: “How confident are you in your own Oracy and Graphicacy skills?”. The options provided were: ‘not confident at all’, ‘slightly confident’, ‘somewhat confident’, ‘fairly confident’, and ‘very confident’. This was an important question to ask the students as it allowed the author to compare the students’ answers as to how confident they were in both oracy and graphicacy generally, and how confident they were in relation to individual skills related to both. The table below lists the number of students in each year who rated their confidence in oracy from the five options mentioned previously, and in a separate table, graphicacy. Also refer to Appendix 8.

Figure 4.3

PS Teachers' Perceptions of Personal Confidence in Oracy (Author's Original)

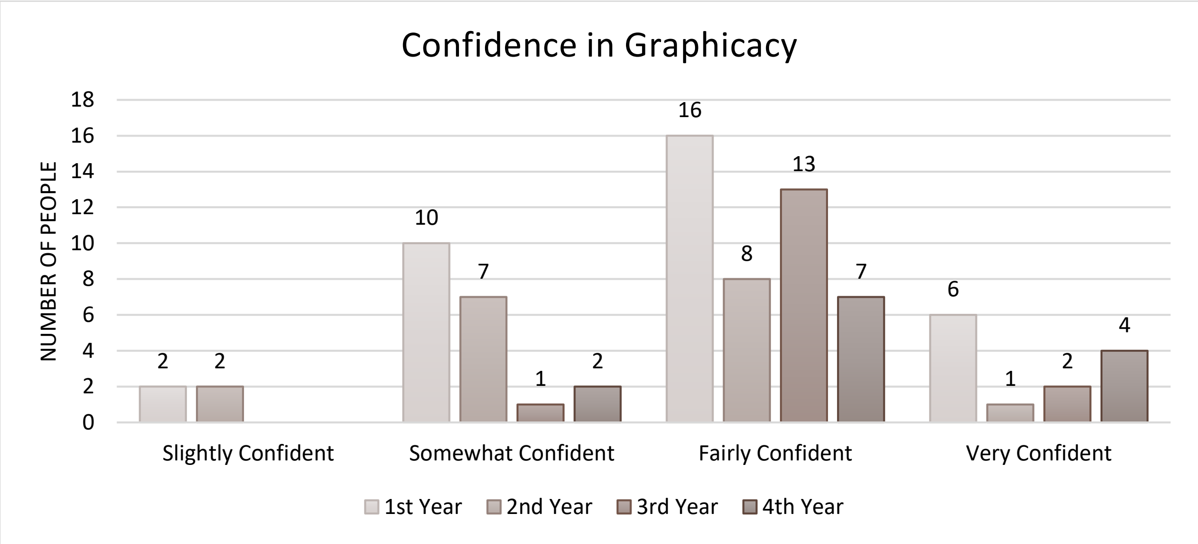


The figure above presents how confident the PS teachers rate themselves on their oracy skills. The most popular response amongst the combined group of participants was the response "fairly confident" with 46% of students opting for this choice. When this is broken down into year groups, "fairly confident" was the most selected choice by Y1, Y3, and Y4. The second overall popular response was "somewhat confident", making up for 41% of this cohort, this was the most popular answer given by Y2 students. This response was also the second most popular choice for Y1 (n=12), Y3 (n=5), and Y4 (n=4). The option "somewhat confident" (n=5) and "very confident" (n=5) each totalled 6% of the participants, although each response included different year groups. Participants in Y1 (n=2), Y2 (n=1), and Y4 (n=2) selected "very confident" in their response, although few from each year, in relative terms. Y3 was the only year that did not select this option. Participants in Y1 (n=4) and Y3 (n=1) were the only two groups that chose "slightly confident" in their response to oracy. Finally, the group with the smallest number of votes was "not confident at all" (n=1) which was chosen by just 1% of the overall participants in the questionnaire, the only year group to select this option was Y1 with one single vote.

Overall, the majority of PS teachers fall between the categories of “somewhat confident” (n=33) and the “fairly confident” (n=37). Figure 4.4 displays the PS teachers’ perceptions of confidence in graphicacy skills and practice.

Figure 4.4

PS Teacher’s Perceptions of Personal Confidence in Graphicacy (Author’s Original)



When comparing the confidence in oracy skills and graphicacy skills it is clear from the chart that PS teachers are more confident in their graphicacy skills. The table above displays four response choices ‘slightly confident’ (n=4), ‘somewhat confident’ (n=20), ‘fairly confident’ (n=44), and ‘very confident’ (n=13), however the option of ‘not confident at all’ is not displayed in the table as no participants chose this in their responses. The most popular response was ‘fairly confident’ -representing 54% of the overall total responses. The choice ‘somewhat confident’ made up a quarter (25%) of the total responses, and 16% of the participants chose ‘very confident’. The lowest number of votes went to ‘slightly confident’ with 5% of the overall total, and ‘not confident at all’ at 0%. First and Y2 participants were the only groups who chose ‘slightly confident’ as a response. Y3 participants are most confident in their graphicacy skills as 94% of their votes went for ‘fairly confident’ and ‘very confident’. Y2 participants were the least confident in their own graphicacy skills out of the year groups.

Question seven of the questionnaire asked participants: “Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Oracy skills most, by dragging the choice boxes”. Each year group was given a list of their current modules, for example, Y1 students had only a choice of their Y1 modules, and Y4 students only has a choice of their Y4 modules. The findings from this question are divided by year group and are displayed in Figure 4.5. Also refer to Appendix 9.

Figure 4.5

Year One Oracy Development: Modules (Author’s Original)

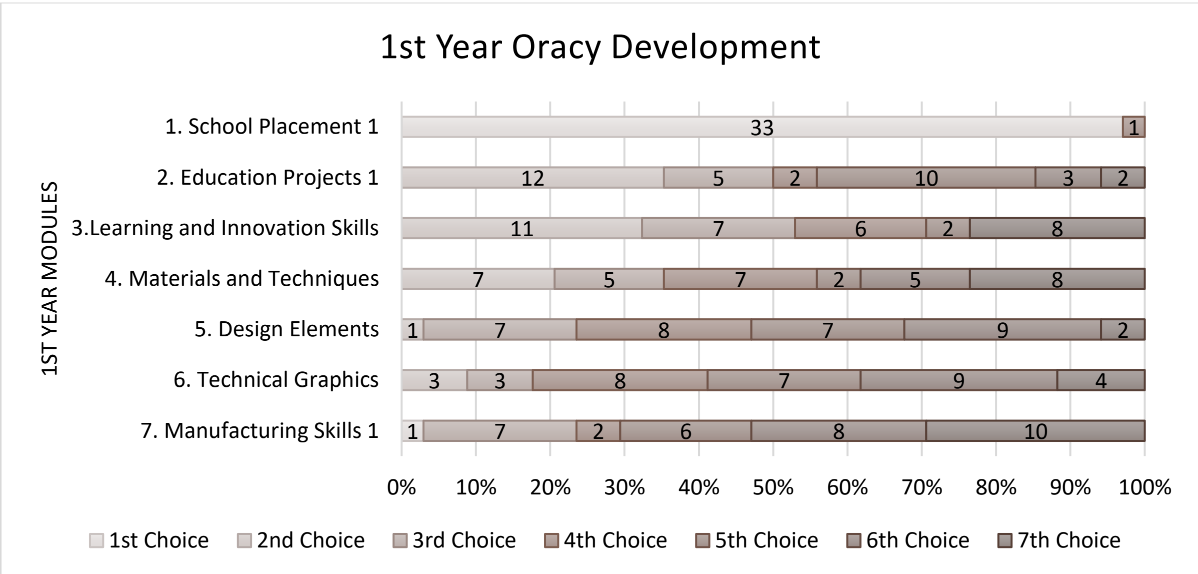


Figure 4.5 shows seven first-year modules rated one to seven, with one being the module that students decided developed their oracy skills the most, and seven being the module that students voted developed their oracy skills the least. At the top of the table which was voted as the number one module for developing oracy skills was ‘School

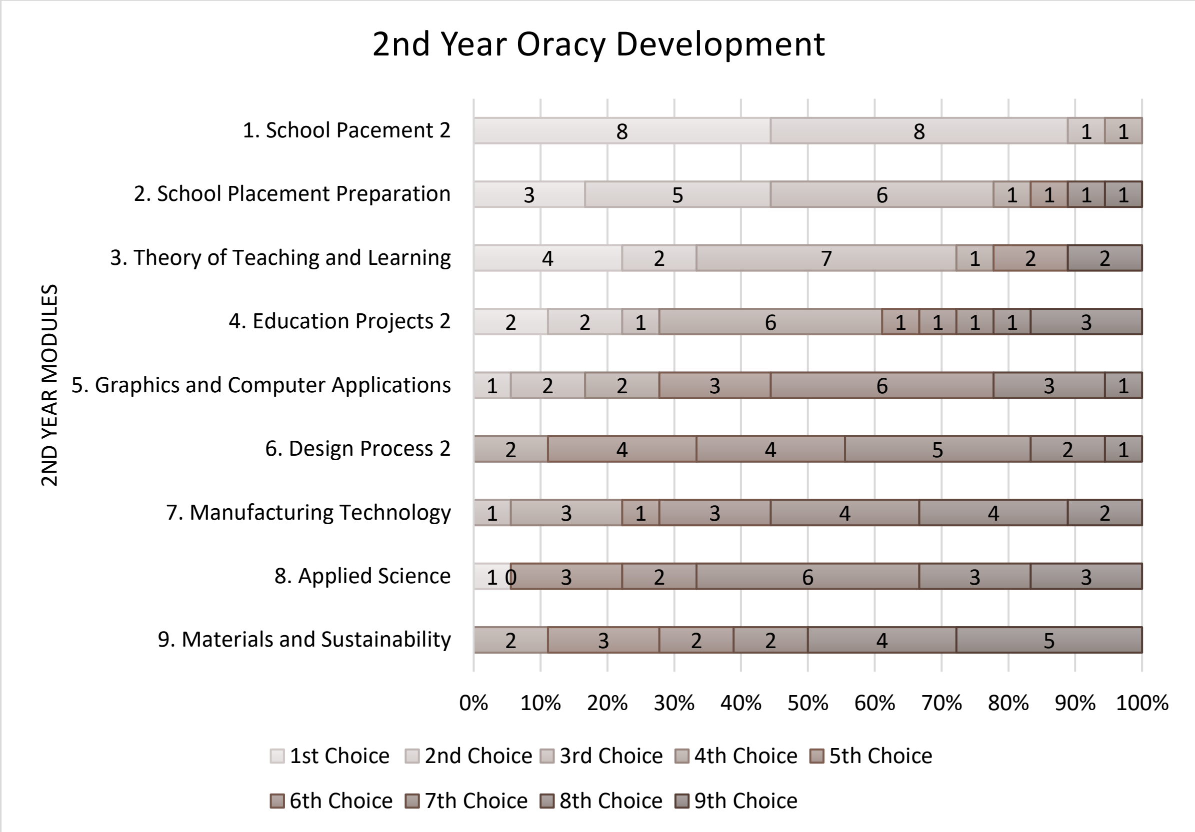
Placement 1' with a total of 97% of participants listing it as their number one choice, with the remaining 3% selecting this module as their second choice.The second highest score was 'Education Projects 1' with 35% of the cohort placing it as number two on their list, 15% placing it at number three, 6% placing it number four, 29% placing it at number five, 9% placing it 6th, and 6% placing it last at 7th place. Third place on the chart is 'Learning and Innovation Skills', the breakdown goes as follows: 32% placing it as number two, 21% placing it at number three, 18% at number four, 6% at number five, and lastly 24% placed it 7th. The overall three highest ranked modules for oracy development on the ITE programme have been listed in order as 'School Placement 1', 'Education Projects 1' and 'Learning and Innovation Skills'.

The bottom half of the chart displays the modules where oracy was developed the least, the three modules ranked from the lowest up in order are: 'Manufacturing Skills 1', 'Technical Graphics' and 'Design Elements'. The module 'Manufacturing Skills' was the ranked the lowest out of the seven modules, the breakdown of the placements are as follows, 3% ranked it as number one, 21% placed it at number three, 6% placed it at number four, 18% placed it as number five, 24% at number six, and lastly 29% of students placed it last when answering this question. This module was the most frequent option for 7th place with 29% of students ranking it number seven. Next, the Y2 module findings fill be discussed.

Figure 4.6 represents the responses from Y2 students regarding the development of oracy skills in their Y2 modules, ranked highest to lowest. The top three modules for oracy development according to the Y2 students, in order, were 'School Placement 2', 'School Placement Preparation', and 'Theory of Teaching and Learning". In first place is 'School Placement 2', 44% of this cohort placed this module at number one, 44% placed it at number two, and 6% placed this module as number three and number four in their ranking.

Figure 4.6

Year Two Oracy Development: Modules (Author's Original)

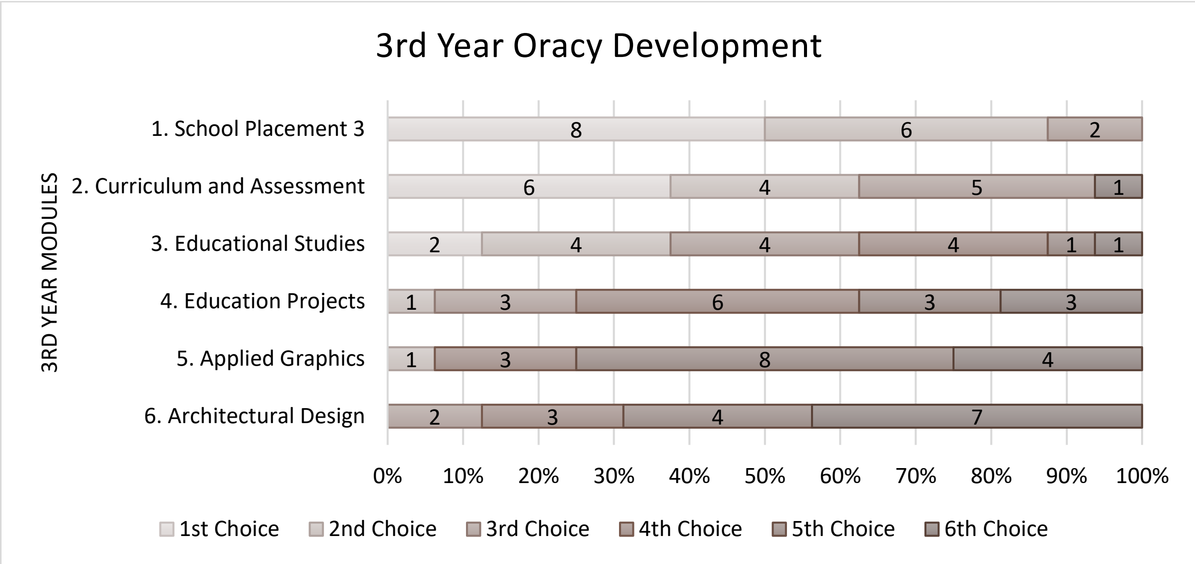


In second place from the chart is 'School Placement Preparation', 17% put this module at the top of their ranking in first place at number one, 28% placed it at number two, 33% placed it at number three, and 6% of students placed it at number four, five, six, and seven. In third place on the chart is 'Theory of Teaching and Learning', 22% of this group placed the module at number one, 11% placed it at number two, 39% placed it at number three, 6% placed it at number four, and 11% placed the module at number five and six. For the majority of students, the modules which benefitted their oracy skills development the most were 'School Placement 2', 'School Placement Preparation', and 'Theory of Teaching and Learning". The findings from Y3 will be displayed in the following paragraph.

Y3 were asked to re-arrange their six modules in order ranking from highest to lowest to demonstrate which modules helped them develop their oracy skills most and the least. The top three modules from the chart are ‘School Placement 3’, ‘Curriculum and Assessment’, and ‘Educational Studies’.

Figure 4.7

Year Three Oracy Development: Modules (Author’s Original)

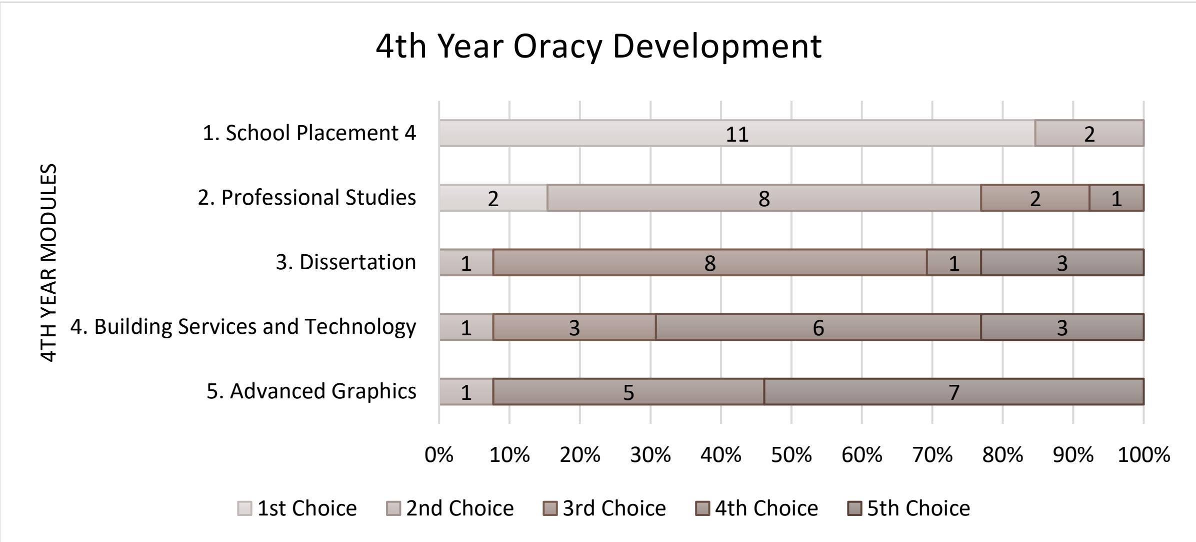


In top place at number one is ‘School Placement 3’ as 50% of the Y3 group selected this module as number one, 38% placed it at number two, and 13% placed the module at number three. In second place on the chart is ‘Curriculum and Assessment’ and the breakdown is as follows, 38% choosing this option at number one, 25% placing it at number two, 31% placing it at number three, and 6% placing the module at number six, last place. In third place on the chart is ‘Educational Studies’, 13% placed this module at number one, 25% of students placed this module at number two, three, and four, and 6% placed it at number five and six on their ranking.

The remaining three modules were ranked at the lowest meaning students did not find these modules as beneficial in helping them develop oracy skills as the three modules mentioned above. These three modules, ranking lowest and above, in order, are 'Architectural Design', 'Applied Graphics' and "educational projects". The lowest ranked module was 'Architectural Design', and it is split up as follows, 13% chose this as number three, 19% placed it as number four, 25% selected it as number five, and lastly 44% of this cohort selected this module as number seven on their list. The following table displays the responses made by Y4 students in response to this question.

Figure 4.8

Year Four Oracy Development: Modules (Author's Original)



Y4 students had a total of five modules in their final year, which they were asked to rank in order according to the question. The top two modules for oracy development from Y4 student's point of view are 'School Placement 4' and 'Professional Studies'. In first place on the chart is 'School Placement 4' with 85% of the total cohort putting it at number one on this list, 15% placed this module at number two for developing their oracy skills. In second place is 'Professional Studies', as 15% of the participants in this group placed it at number one, 62% placed it at number two, 15% placed it at number three, and 8% chose this module as number four on their list. In third place is the module ‘Dissertation’ as this currently stand as the middle ground between developing oracy skills the most and the least. This module consists of 8% placing it as number two, 62% placing it as number three, 8% selecting it as number four, and lastly 23% of this group of participants chose this module as number five.

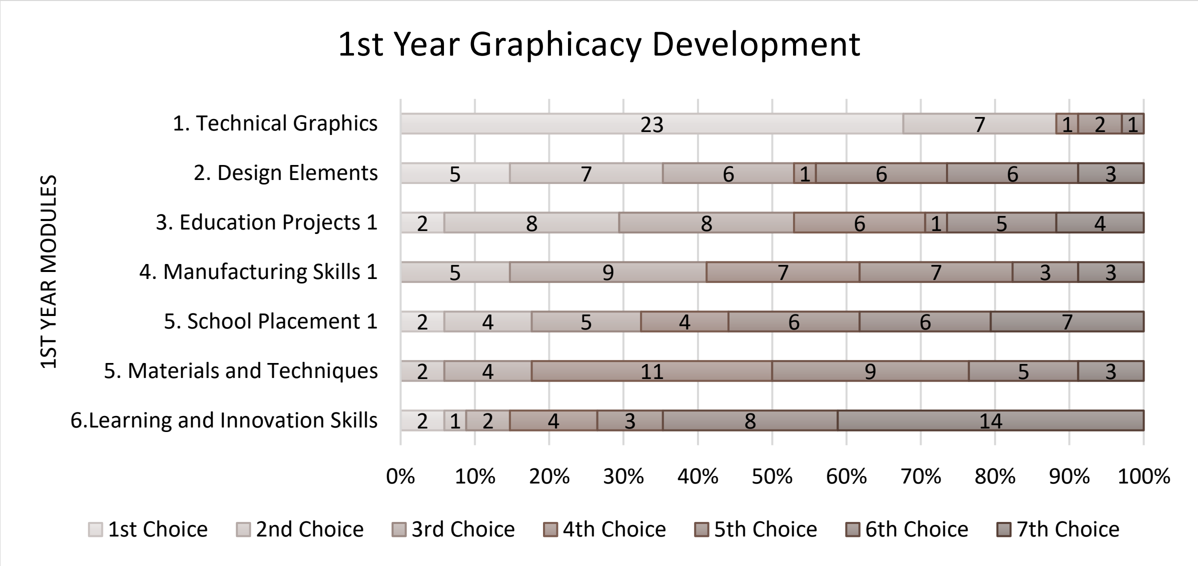
According to the Y4 participants the modules ‘Advanced Graphics’ and ‘Building Services and Technology’ are the two modules which helped develop their oracy skills the least. In very last place on the chart is ‘Advanced Graphics’, 8% of this group of PS teachers chose this as number two on their list, 38% selected this option as number four, and 54% placed this module as number five. As a result, students picked ‘Advanced Graphics’ as the module in which they felt their oracy abilities were the least developed. The graphicacy skills development findings are shown in the next section.

Like question seven, question eight asked the participants: “Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes”. The participants had to rank the modules in order of where they thought they developed their graphicacy skills most to the module which had least effect on their graphicacy development. Their responses are as follows. Also refer to Appendix 10.

Y1 had the selection of seven modules to rank in order highest to lowest regarding where they felt they have developed their graphicacy skills most to least. The three top ranked modules in order are ‘Technical Graphics’, ‘Design Elements’ and ‘Education Projects 1’. See Figure 4.9. In first place is ‘Technical Graphics’ this was ranked number one by 88%, number two by 21%, number four and 6 by 3%, and number six by 6% of PS teachers. In second place is ‘Design Elements’, this was ranked number one by 15%, number two by 21%, number three, five and six by 18%, number four by 3%, and number seven, last, by 9%. In third place on the chart, is ‘Education Projects 1’, this was placed number one by 6%, number two and 3 by 24%, number four by 18%, number five by 3%, number six by 15%, and number seven by 12%.

Figure 4.9

Year One Graphicacy Development: Modules (Author's Original)

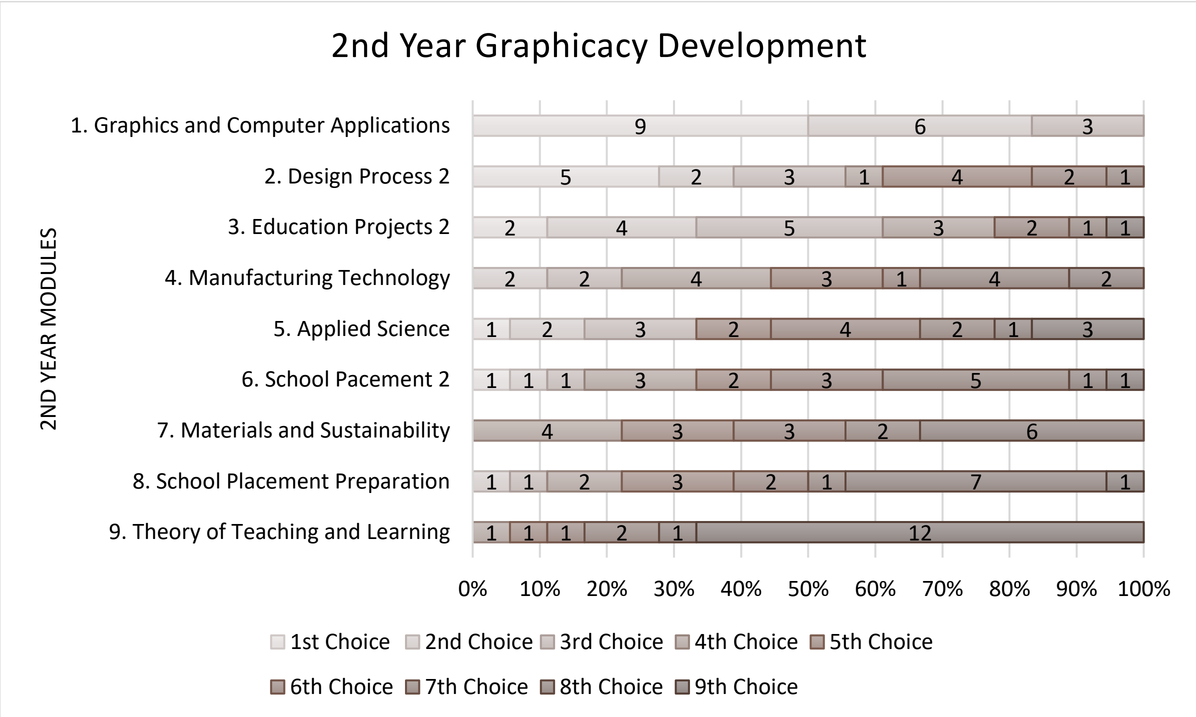


The two modules which were ranked the lowest are 'Materials and Techniques' and 'Learning and Innovation Skills'. Second from the bottom is 'Materials and Techniques' and the breakdown goes as follows: 6% of students placed this module at number two, 12% at number three, 32% at number four, 26% at number five, 15% at number six, and 9% at number seven. According to Y1 PS teachers, 'Technical Graphics' contributes the most to graphicacy skills development, and 'Learning and Innovation Skills' contributes the least to development in this area. Next, the Y2 findings from question eight will be discussed.

Y2 students had a total of nine modules to rank highest to lowest in terms of graphicacy development. The top three modules for graphicacy development according to this cohort are 'Graphics and Computer Applications', 'Design Process' and 'Education Projects 2'. In first place is 'Graphics and Computer Applications', 50% placed it at number one, 33% placed it at number two, and 17% placed it at number three. In second place is ‘Design Process’, the breakdown goes as follows, number one by 28%, number two and six by 11%, number three by 17%, number four and seven by 6%, and number five by 22%. In third place is ‘Education Projects 2’, this was selected as number one and 6 by 11%, number two by 22%, number three by 28%, number four by 17%, and number seven and eight by 6%.

Figure 4.10

Year Two Graphicacy Development: Modules (Author’s Original)



The three modules which contributed the least to the development of graphicacy skills from the PS teacher’s perspectives are ‘Materials and Sustainability’, ‘School Placement Preparation’, and ‘Theory of Teaching and Learning’. In seventh place out of nine is ‘Materials and Sustainability’, the percentage breakdown by placement is, number four by 22%, number five and 6 by 17%, number seven by 11%, and number eight by 33%.

In second last place on the table at number eight is ‘School Placement Preparation’ with 6% of the participants placing it at number two, three, seven, and nine, 11% placing it at number four, and six, 17% placing it at number five, and 39% of participants placing it at number eight.

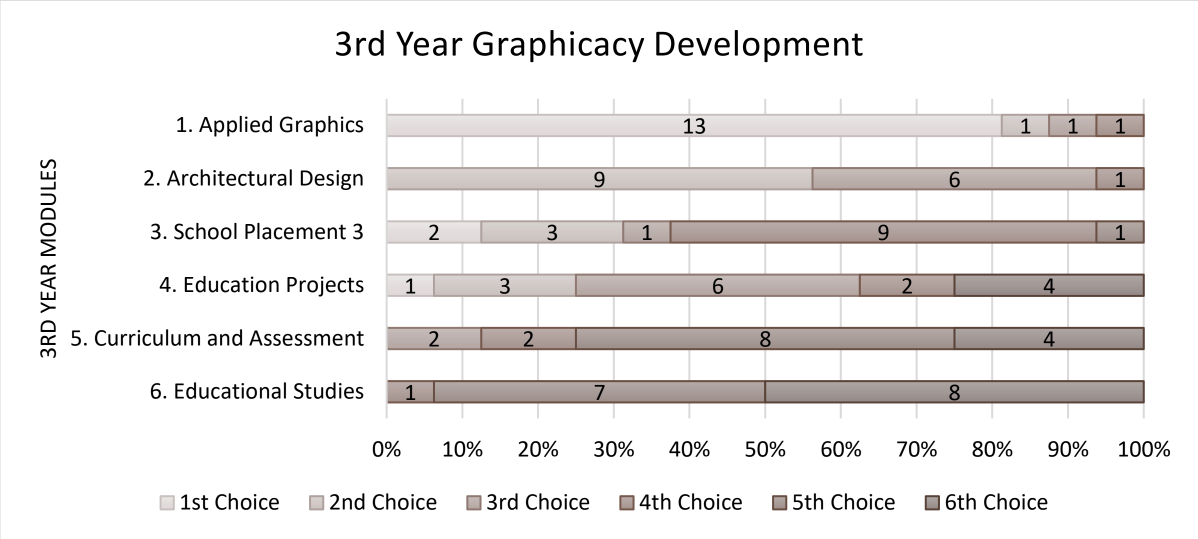
Lastly, number nine, the module which students felt benefitted their graphicacy skills development the least is ‘Theory of Teaching and Learning’, 6% of this cohort selected this option as number four, five, six, and eight, 11% placed it at number seven, and 67% placed it at number nine on their module list. From these findings, Y2 PS teachers believe that ‘Graphics and Computer Applications’ was the best module for graphicacy development, and ‘Theory of Teaching and Learning’ developed their graphicacy skills the least. Next, the findings from question eight according to Y3 will be discussed.

Y3 participants had to re-align their six modules from the list seen above. The top three modules where PS teachers developed their graphicacy skills the most are ‘Applied Graphics’, ‘Architectural Design’, and ‘School Placement 3’. In first place on the chart is ‘Applied Graphics’ this was placed at number one by 81% and at number two, three, and four, by 6% of the participants in Y3. In second place is ‘Architectural Design’ which was placed number two by 56%, number three by 38%, and number four by 6% of PS teachers. In third place is ‘School Placement 3’, this was voted number one by 13%, number two by 19%, number three and five by 6%, and number four by 56%.

The opposite end of the table displays the modules which student’ felt least contributed to their graphicacy development, there are ‘Education Projects’, ‘Curriculum and Assessment’, and ‘Education Studies’. The module ‘Education Projects’ was voted as number one by 6% of PS teachers, number two by 19%, number three by 38%, number four by 13%, and 25%. This was followed by ‘Curriculum and Assessment’ which was chosen as number three and four by 13%, number five by 50%, and number six by 25%. In last place, ‘Education Studies’, which was placed at number four by 6%, number five by 44%, and number six by 50% of the cohort.

Figure 4.11

Year Three Graphicacy Development: Modules (Author's Original)



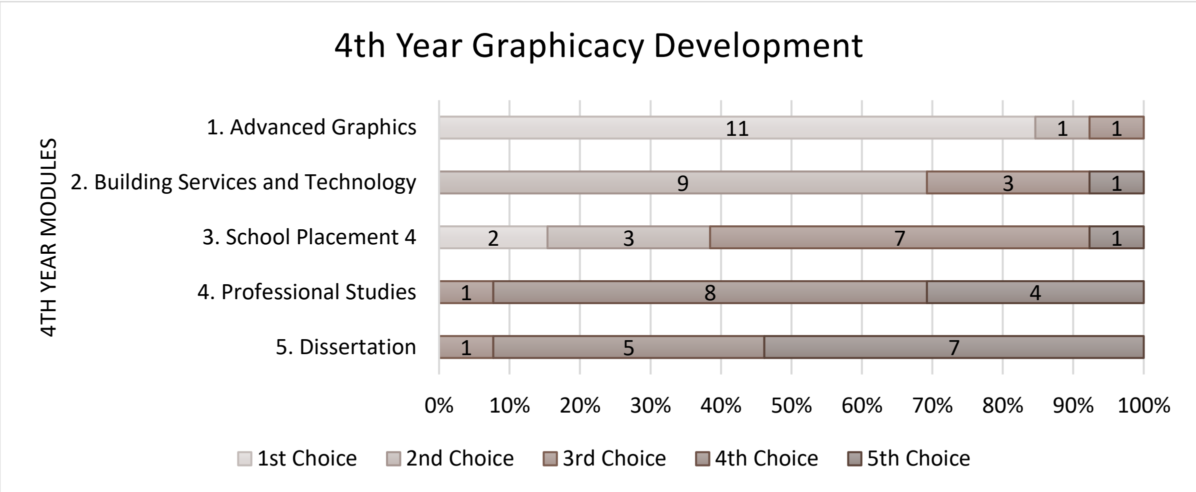
Therefore, the highest module in terms of graphicacy development from a third-year perspective is 'Applied Graphics' and the lowest being 'Education Studies'. The last cohort, Y4, will be discussed in the following paragraph.

In Y4 of the ITE programme, PS teachers have five modules, namely: 'Advanced Graphics', 'Building Services and Technology', 'School Placement 4', 'Professional Studies', and 'Dissertation'. The top two modules which contributed to graphicacy development according to Y4 are 'Advanced Graphics' and 'Building Services and Technology'. In first place is 'Advanced Graphics', as 85% PS teachers listed this module as number one, and 8% of the group place it at number two and three. In second place is 'Building Services and Technology', this module was selected as number two by 69% of this cohort, number three by 23%, and number five by 8% of participants. The module 'School Placement 3' came third place on the table which means it is neither the module where students developed their graphicacy skills the most nor the least. The module breakdown goes as follows, number one by 15%, number two by 23%, number three by 54%, and number five by 8% of participants.

The two modules which contributed the least to graphicacy development in Y4 of the ITE programme are ‘Professional Studies’ and ‘Dissertation’. The module ‘Professional Studies’, which is fourth, second last, on the chart was chosen as number three by 8% of Y4 students, number four by 62%, and number five by 31% of PS teachers. In fifth and last place on the list is ‘Dissertation’, this module was placed at number three by 8%, at number four by 38%, and at number five by 54% in response to question six.

Figure 4.12

Year Four Graphicacy Development: Modules (Author’s Original)



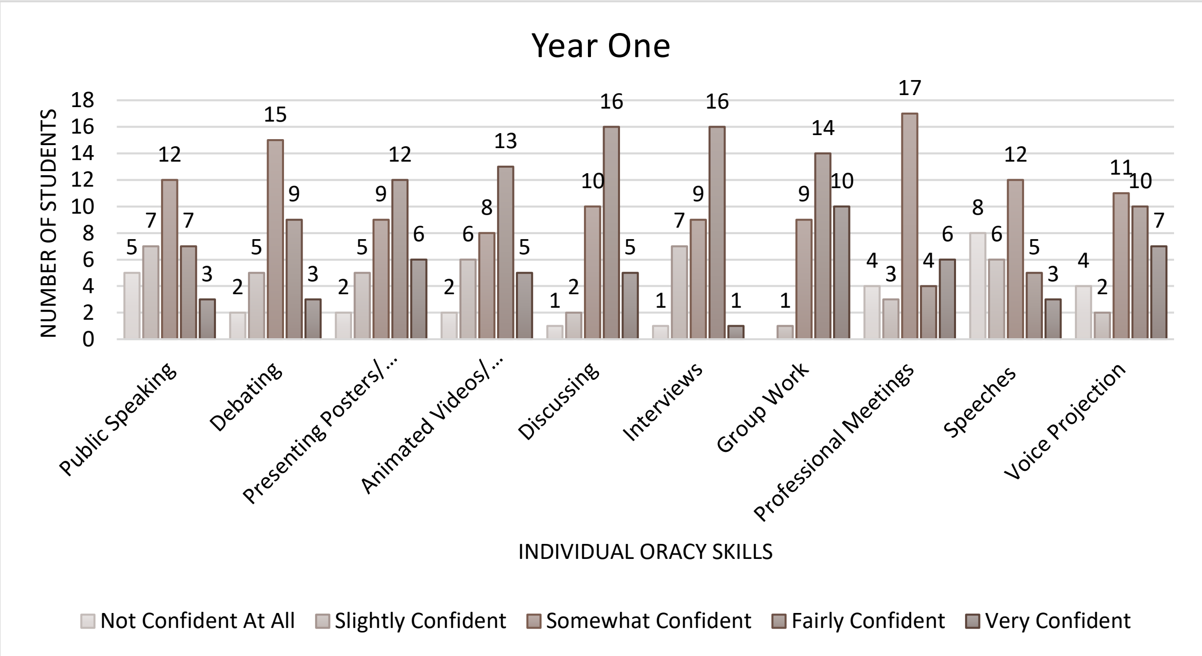
In summary, Y4 students felt that ‘Building Services and Technology’ had the biggest effect on their graphicacy skills development progress and felt that the ‘Dissertation’ module contributed the least to the skills development in this area.

Question nine of the questionnaire asked PS teachers: “Rate how confident you are in the Oracy Skills listed below”, the participants were given 10 oracy skills and were asked to rate by selecting one of the following choices for each skill. The choices they had were: not confident at all, slightly confident, somewhat confident, fairly confident, and very confident. The responses are categorically displayed by year, beginning with Y1. Also refer to Appendix 11.

In Figure 4.13, 35% of Y1 participants deemed themselves “somewhat confident” in their “public speaking” skills, this was the most popular reponse from this cohort. This category also received the highest “not confident at all” response rate as 15% of the cohort selected this as their response. 44% of participants said they were “somewhat confident” in their “debating” skills. The most popular rating for “presenting posters/ PowerPoints” was “fairly confident” which is 35% of Y1 participants. 38% voted “fairly confident” when referring to their “animated videos/ PowerPoints”.

Figure 4.13

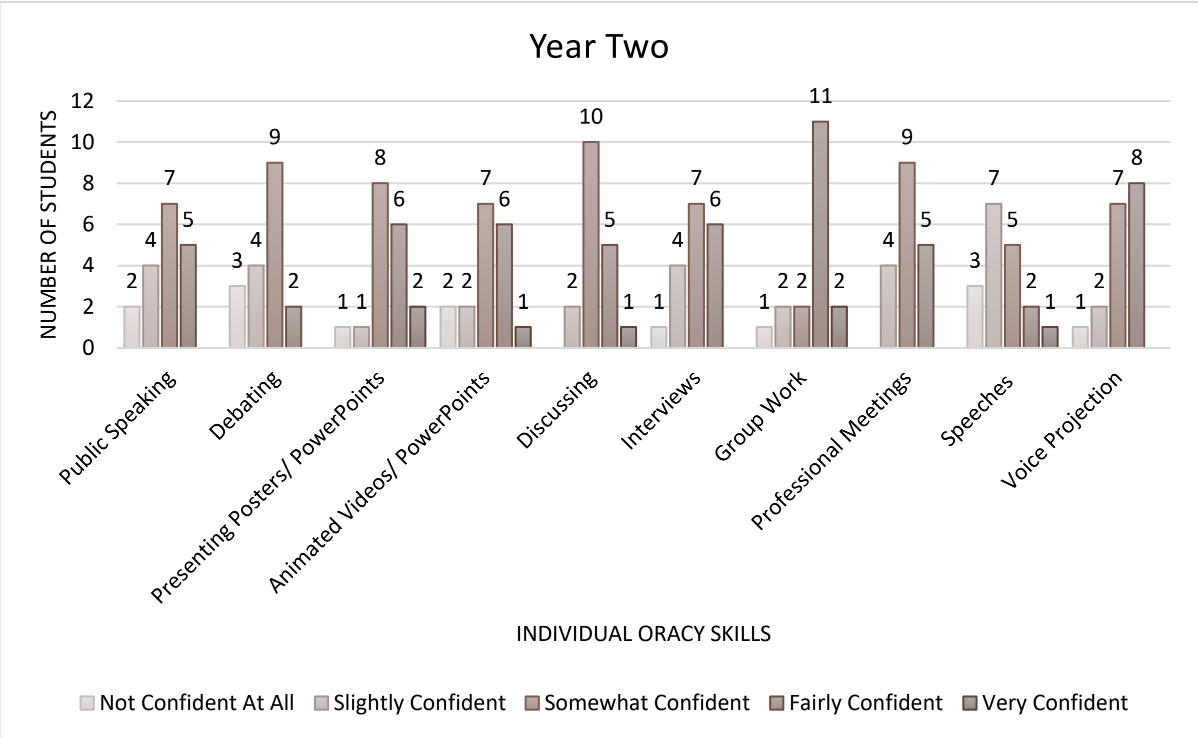
Year One Confidence in Oracy: Individual Skills (Author’s Original)



47% deemed themselves “fairly confident” in “discussing” skills, and in “interviews”. 41% said they were “fairly confident” when participating in “group work”. “Somewhat confident" made up for 50% of the responses when rating confidence in "professonal meetings". 35% of participants said they were "somewhat confident" in making "speeches", this was the most popular response for this category. Lastly, 32% voted "somewhat confident" when rating their "voice projection" skills, this category also received the highest "very confident" response with a total of 21% of the cohort selecting this option. Figure 4.14 displays Y2's confidence in their oracy skills.

Figure 4.14

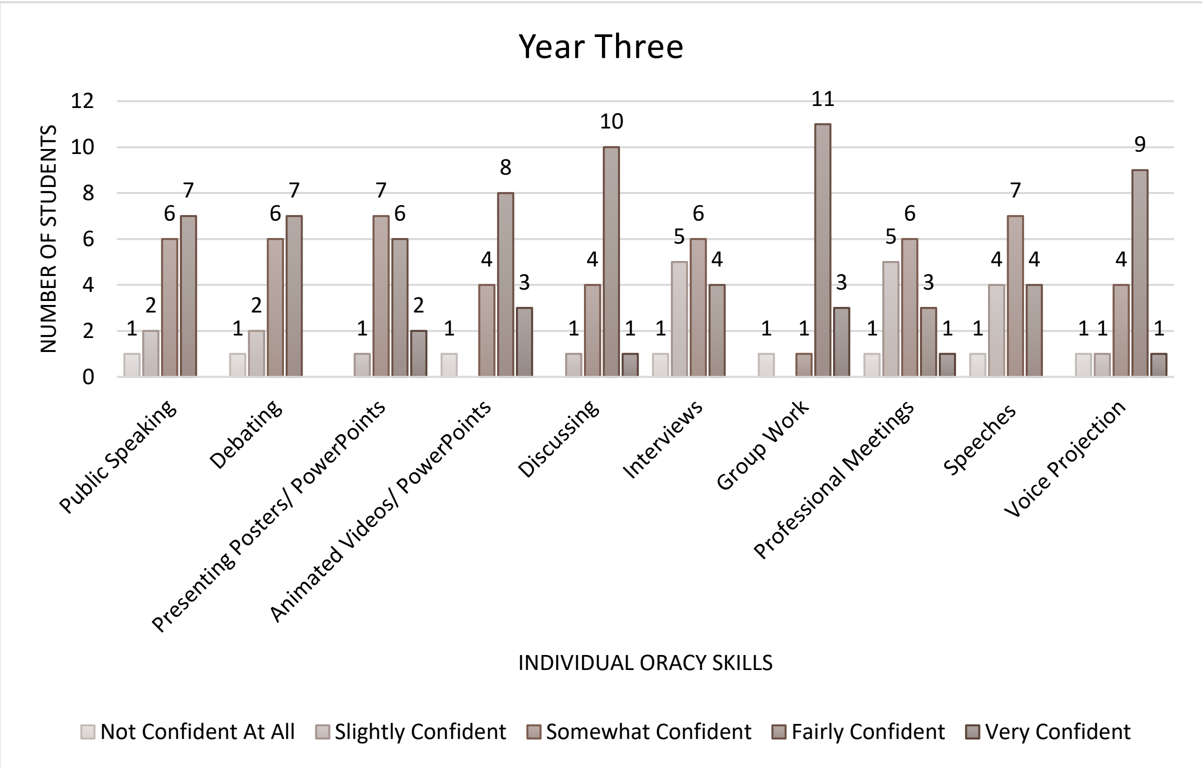
Year Two Confidence in Oracy: Individual Skills (Author's Original)



39% of Y2 participants said they were "somewhat confident" in "public speaking", "animated videos/ PowerPoints", and "interviews". 50% selected "somewhat confident" for "debating" and "professional meetings". "Debating" also received one of the most "not confident at all" votes as 17% of this group chose this response. 44% of this cohort said they were "somewhat confident" in "presenting posters/ PowerPoints" and "fairly confident" in their "voice projection" skills. "Presenting posters/ PowerPoints" was also a category which received one of the highest "very confident" votes as 11% selected this as their answer. The category "discussing" skill's most popular rating was "somewhat confident" as 56% chose this response. 61% of Y2 PS teachers deemed themselves "fairly confident" when involved in "group work", 11% of this cohort also said they were "very confident" in this category. Lastly, 39% of Y2 participants selected "slightly confident" when ranking their confidence levels in "speeches", this category also gained "not confident at all" votes by 17% of this cohort. Figure 4.15 displays the responses from Y3.

Figure 4.15

Year Three Confidence in Oracy: Individual Skills (Author's Original)

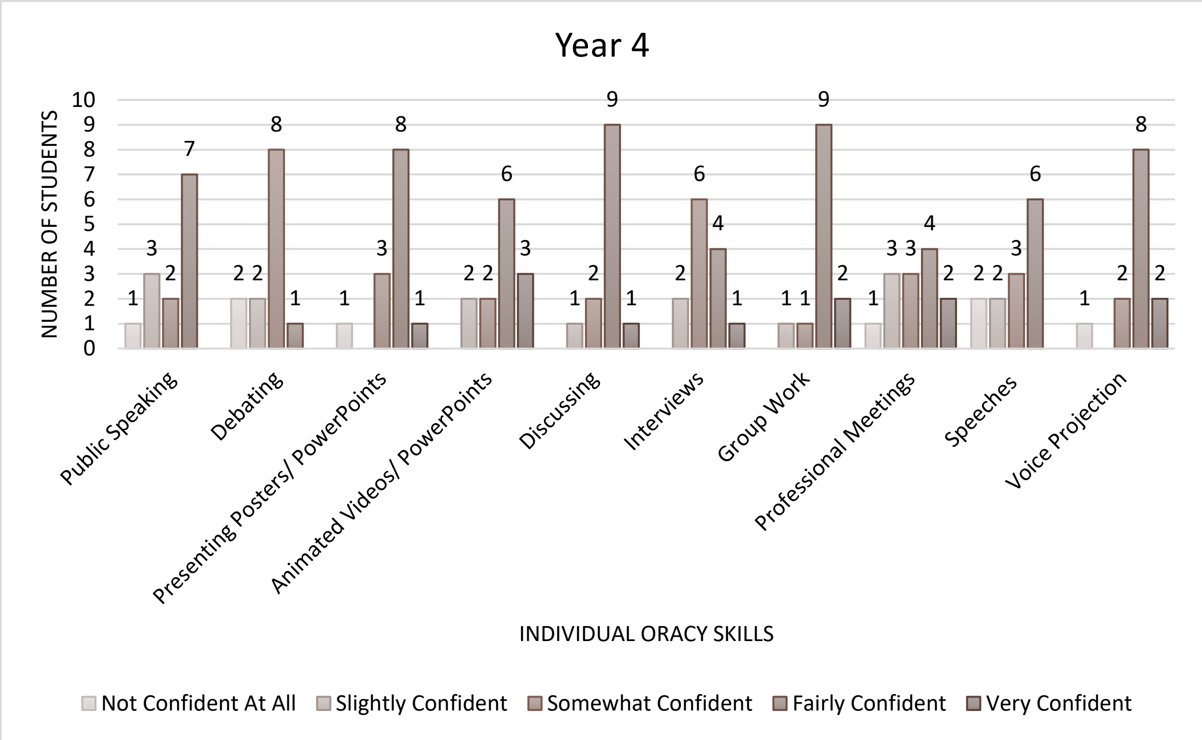


44% of Y3 PS teachers said they were “fairly confident” in “public speaking” and “debating”, and “somewhat confident” in both “presenting posters/ PowerPoints” and “speeches”. 50% of this cohort deemed themselves “fairly confident” with “animated videos/ PowerPoints” and 63% said they were “fairly confident” with “discussing”. 38% of participants in this group voted “somewhat confident” in “interviews” and “professional meetings”. 69% stated that they were “fairly confident” with “group work”, and lastly, 56% of Y3 PS teachers selected “fairly confident” as their response when asked to rate their confidence in “voice projection” skills. The category “animated videos/ PowerPoints” received the highest number of “very confident” responses as 19% of participants selected this option as their answer. However, “not confident at all” was selected by 6% of the cohort for each skill category, with the only exceptions being “presenting posters/ PowerPoints” and “discussing” as they received none. Figure 4.16 displays Y4’s confidence in the individual oracy skills.

54% of Y4 participants selected the choice “fairly confident” when rating their confidence in “public speaking”, this was the most popular response for this category. 62% of this cohort said they were “somewhat confident” in “debating” and “fairly confident” in “presenting posters/ PowerPoints” and “voice projection”. 46% of Y3 participants chose “fairly confident” when rating “animated videos/ PowerPoints” and “speeches”, and “somewhat confident” when rating their confidence in “interviews”. 69% of this group selected “fairly confident” when rating “discussing” skills and “group work”. Finally, 31% said they were “fairly confident” in oracy skills related to “professional meetings”. The categories with the highest “not confident at all” responses were “debating” and “speeches” as 15% of participants selected this option. The category with the highest number of votes for “very confident” was “animated videos/ PowerPoints” as 23% of Y3 participants selected this response.

Figure 4.16

Year Four Confidence in Oracy: Individual Skills (Author's Original)

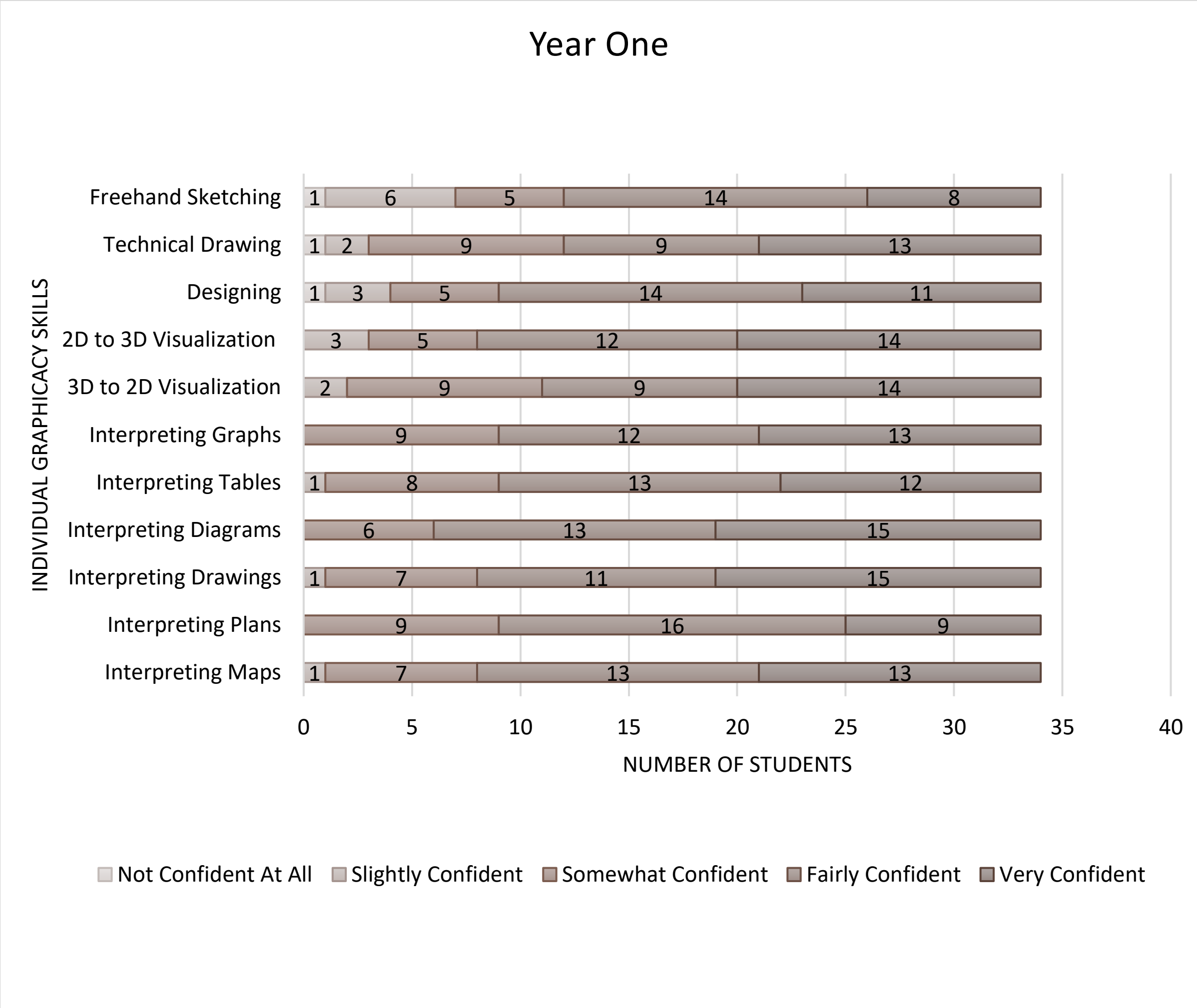


Next, question 10 discusses similar results in terms of graphicacy. Question 10, like question nine, asked participants: "Rate how confident you are in the Graphicacy Skills listed below". Similar to the previous question the participants were given graphicacy related skills which they had to rate according to their confidence level. Years 1 to 4 are displayed individually. Since there were more categories for graphicacy, the results will be displayed in an alternative table design from question nine to ensure clarity. Also refer to Appendix 12.

In Figure 4.17, 41% of Y1 PS teachers said they were "fairly confident" in "freehand sketching" and "designing", and "very confident" in "2D to 3D visualisation" and "3D to 2D visualisation". 38% deemed themselves "very confident" in "technical drawing", "interpreting maps", and "interpreting graphs", and "fairly confident" in "interpreting tables" and “interpreting maps”. The most popular response for the category “interpreting drawings” and “interpreting diagrams” was “very confident” as 44% chose this as their answer.

Figure 4.17

Year One Confidence in Graphicacy: Individual Skills (Author’s Original)

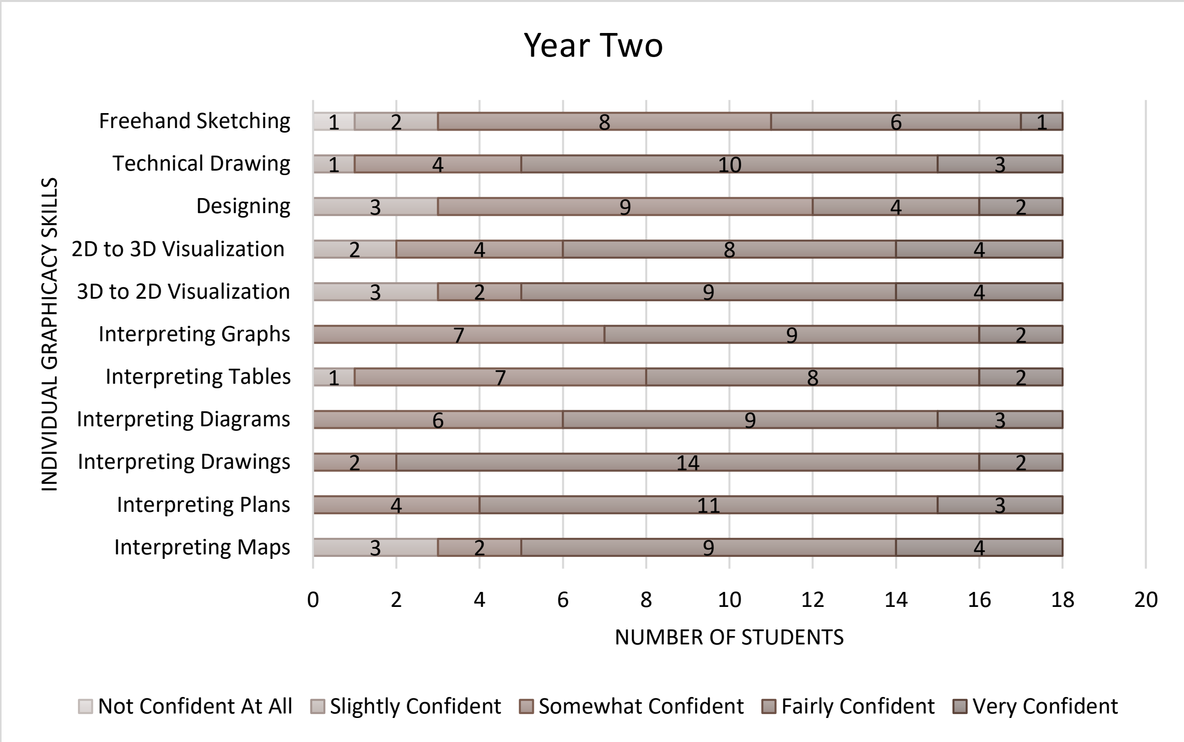


The last category, “interpreting plans” received 47% of votes for “fairly confident”. Categories which received the highest number of “not confident at all” votes were “freehand sketching”, “technical drawing” and “designing” as 3% of the participants selected this as their response. However, the categories which received the most “very confident” responses were “interpreting drawings” and “interpreting diagrams” as they received 44%

of the responses from Y1 participants. Next, Figure 4.18 displays graphicacy skill confidence ratings from Y2.

Figure 4.18

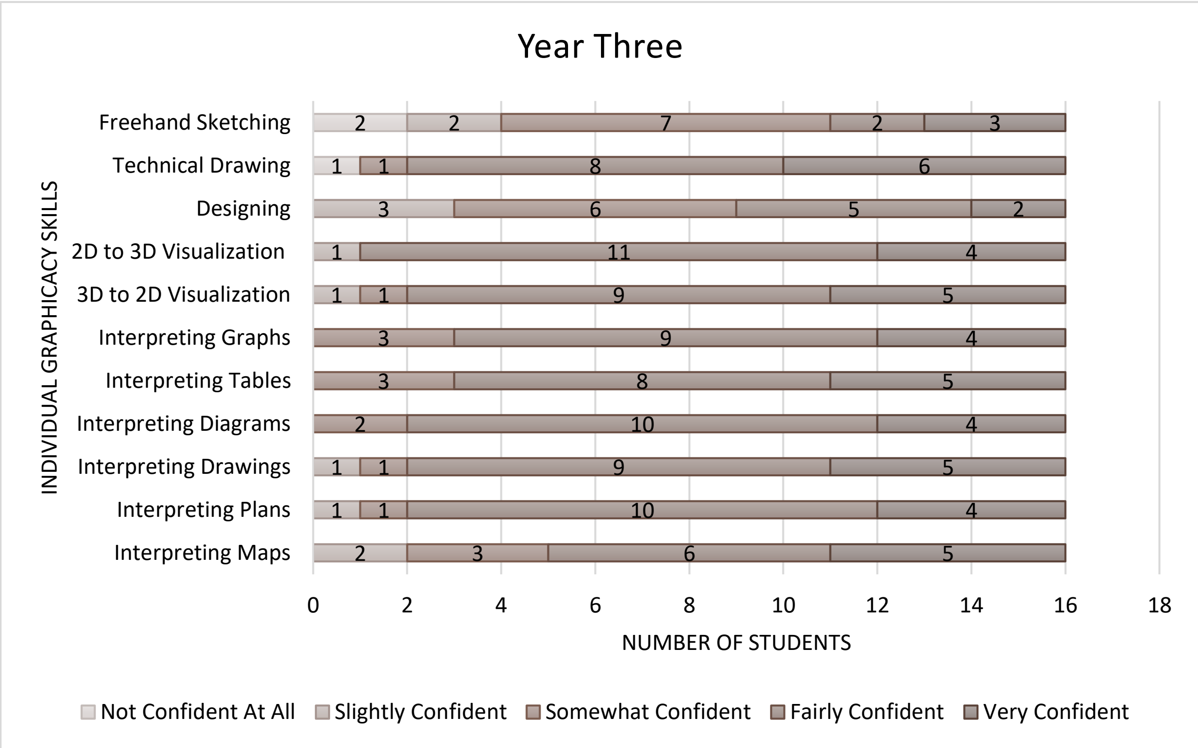
Year Two Confidence in Graphicacy: Individual Skills (Author's Original)



44% of Y3 participants said they were "somewhat confident" in "freehand sketching", and "fairly confident" in "2D to 3D visualisation" and "interpreting tables". 56% chose "fairly confident" as their response to "technical drawing". 50% of this group said they were "somewhat confident" in "designing" and "fairly confident" in "3D to 2D visualisation", "interpreting graphs", "interpreting diagrams", and "interpreting maps". 78% selected "fairly confident" when rating their confidence in "interpreting drawings" and 61% chose "fairly confident" when rating their confidence levels in "interpreting maps". "Freehand sketching" was the only skill category which received a vote for "not confident at all", this totalled 6%. Lastly, "interpreting maps", "2D to 3D visualisation" and "3D to 2D visualisation" received the most “very confident” responses as 22% of the Y2 cohort chose this as their answer to the question.

Figure 4.19

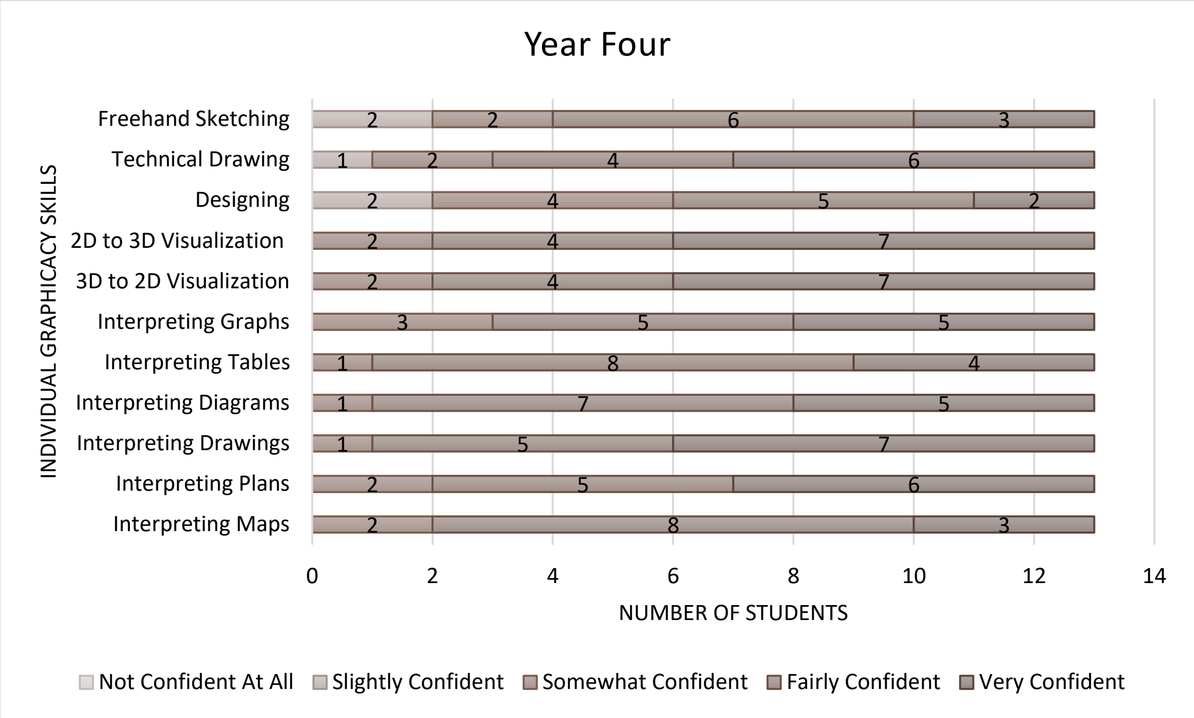
Year Three Confidence in Graphicacy: Individual Skills (Author’s Original)



44% Y3 participants said they were “somewhat confident” when it came to “freehand sketching”. 50% of this cohort rated themselves “fairly confident” with “technical drawing” and “interpreting tables”, and 38% said they were “somewhat confident” in “designing” and “fairly confident” at “interpreting maps”. The response “fairly confident” was the most common choice amongst Y3 when rating their “2D to 3D visualisation” skills. 56% voted “fairly confident” in terms of “3D to 2D visualisation”, “interpreting graphs”, and “interpreting drawings”. Lastly, the most common answer amongst this cohort when rating “interpreting diagrams” and “interpreting plans” was “fairly confident” as it was chosen by 63% of the group. The category with the highest number of “not confident at all” responses was “freehand sketching” with a total of 13% PS teacher’s selecting this option, and the category with the highest “very confident” responses was “interpreting maps” as it was chosen by 38% of Y3. Next, the findings from Y4 will be displayed in Figure 4.20.

Figure 4.20

Year Four Confidence in Graphicacy: Individual Skills (Author’s Original)

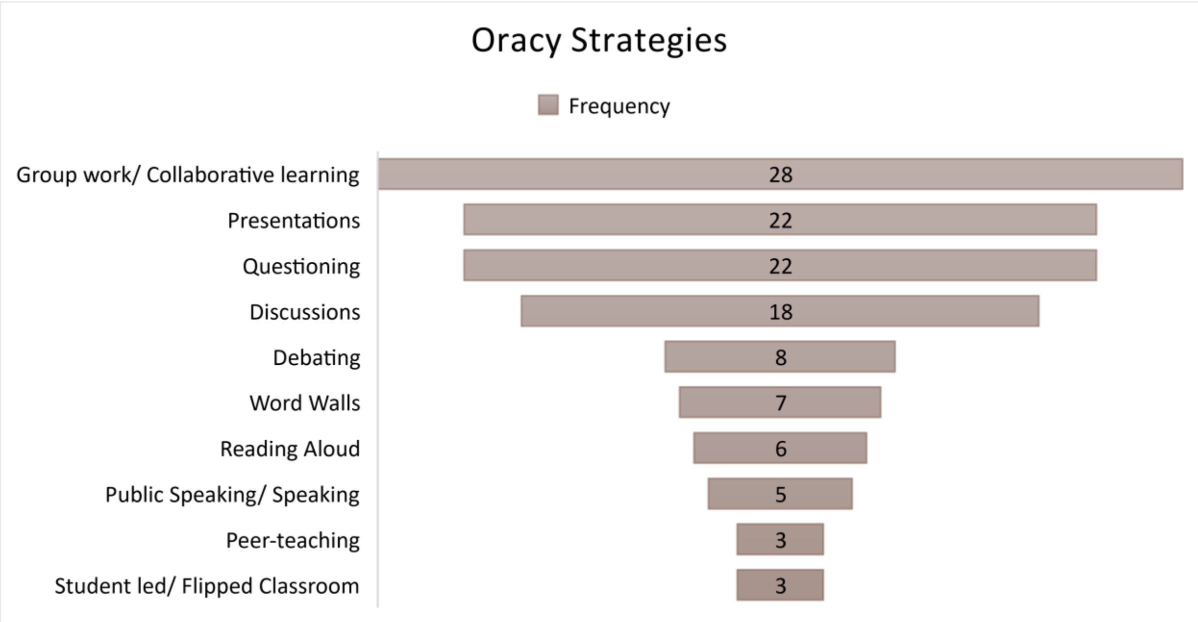


46% of Y4 participants said they were “very confident” at “technical drawing” and “interpreting plans”, and “fairly confident” at “freehand sketching”. The most common response for “designing” was “fairly confident”, and “interpreting graphs” was both “fairly confident” and “fairly confident” as each of these responses were chosen by 38% participants. 54% said they were “very confident” with “2D to 3D visualisation”, “3D to 2D visualisation”, and “interpreting drawings” and “fairly confident” with “interpreting diagrams”. 62% deemed themselves “fairly confident” with “interpreting maps” and “interpreting tables”. The response “not confident at all” was not an option chosen by any of the Y4 participants, although “slightly confident” was selected by 15% when rating “freehand sketching”. 54% of this cohort deemed themselves “very confident” with “2D to 3D visualisation”, “3D to 2D visualisation", and "interpreting drawings". The findings from question 11 and 12 will be discussed, next.

Question 11 asked the PS teachers: "What strategies do you use in your classroom to promote the development of Oracy?". The strategies mentioned below are the top 10 most frequently mentioned strategies by all PS teachers (Y1 to Y4) which they have collectively utilised in their own classroom to promote oracy. Also refer to Appendix 14.

Figure 4.21

Top Ten Oracy Development Strategies (Author's Original)

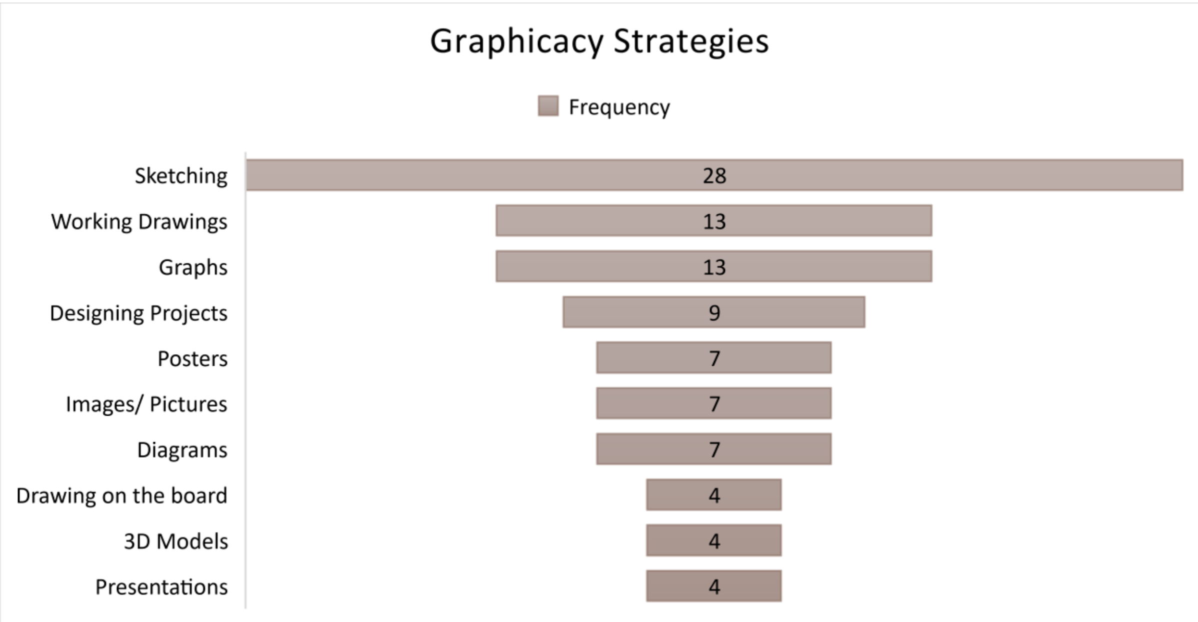


The most popular response amongst all pre-service teachers regarding oracy strategies in the classroom was "group work/ collaborative learning" with 35% of students throughout all years listing it as something they use in their classroom. This was jointly followed by "presentations" and "questioning" with a total of 22 students utilising these strategies, which is 27% of the total cohort. Creating opportunity for "discussions" was the third most popular strategy the pre-service teachers use in their classrooms to promote oracy development, with 22% of students mentioning it in their responses. On the other end of the scale “student led/ flipped classroom” and “peer-teaching” was used by a small number of this cohort with just 4% of students using these teaching strategies in their classroom. Surprisingly “public speaking/ speaking” was mentioned second from the bottom with just 5 students using it as a method of improving and developing student oracy, this is just 6% of students from Y1 to Y4. This strategy came close to getting students to participate in “reading aloud” in the classroom to encourage oracy, with 9% of students including this strategy in their practice.

Following the same structure as question 11, question 12 of the PS teacher questionnaire asked the students “What strategies do you use in your classroom to promote the development of Graphicacy?”. The 10 most popular strategies from all years have been collated and displayed in Figure 4.22. Also refer to Appendix 14.

Figure 4.22

Top Ten Graphicacy Development Strategies (Author’s Original)



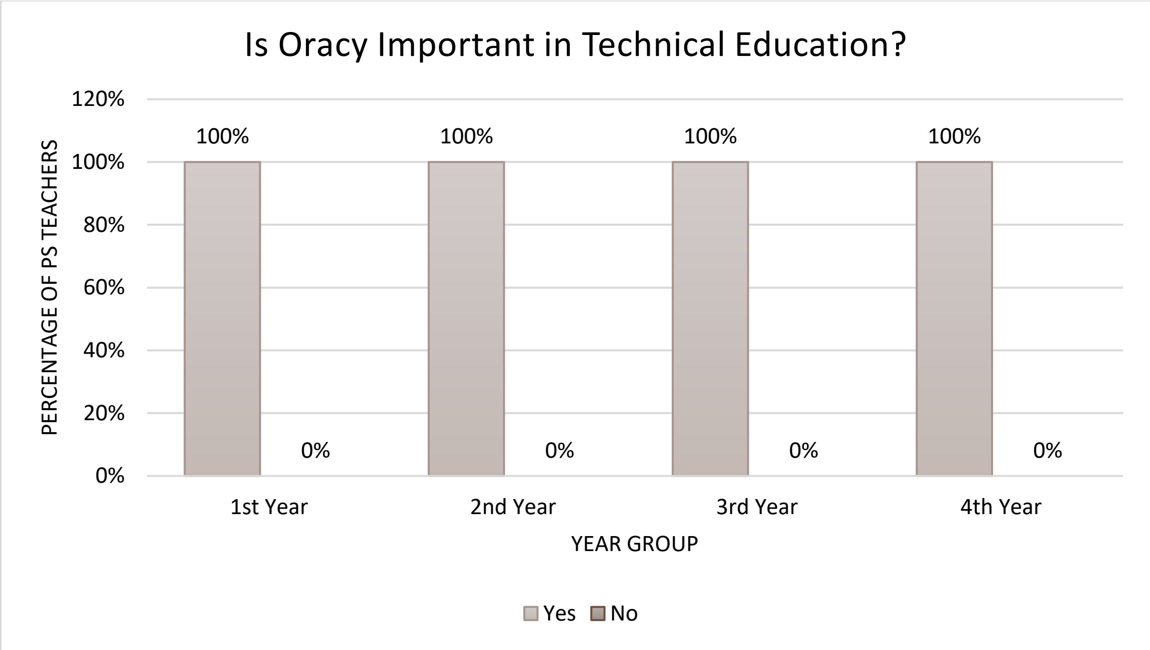
The most popular teaching strategy used by PS teachers is “sketching” with 35% of the total cohort listing it as something they use to promote graphicacy development in their classrooms. This strategy was mentioned by far the most utilised strategy overall with the second most frequent being the use and development of “working drawings” and “graphs” in the class, both of which utilised by 16% of the cohort. Following both “working drawings” and “graphs”, 11% of PS teachers adopted elements of design into the manufacturing of projects with nine PS teachers mentioning “designing projects” in their responses.

The least utilised teaching strategies used by this cohort from the table above are “presentations”, “3D models”, and “drawing on the board”, all of which have been mentioned four times throughout the responses, making up for a mere 5% of PS teachers using them in their practice. The second least popular strategies from the table above were creating “posters”, using “images/pictures”, and making “diagrams” with 9% of PS teachers using these methods to improve graphicacy skill development in the technical classroom.

Question 17 of the questionnaire proposed the question: “Do you think Oracy skills are important in Technical Education?”. The responses from Y1 to Y4 are displayed in Figure 4.23. As you can see from the bar chart, 100% of Y1, Y2, Y3, and Y4 participants chose “yes” as their response to the question, indicating that all PS teachers believe that oracy is important in technical education.

Figure 4.23

Importance of Oracy in Technical Education (Author's Original)

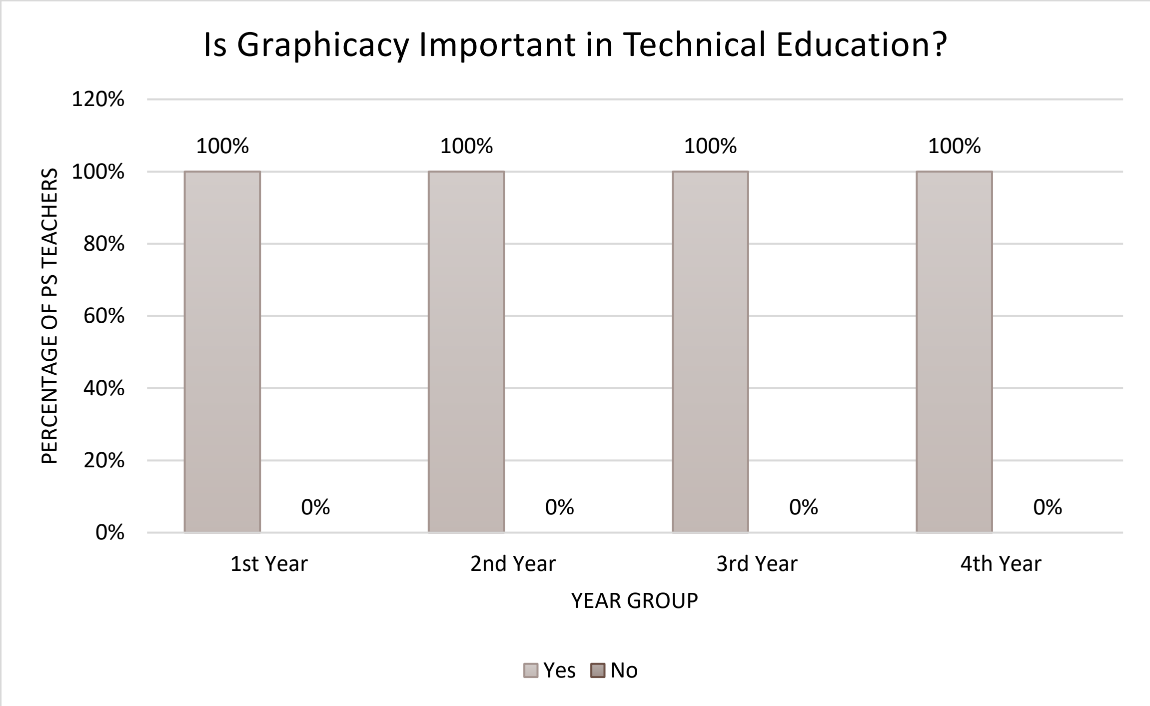


Lastly, question 20 asked participants: "Do you think Graphicacy skills are important in Technical Education?". Their responses are presented in Figure 4.26. As you can see from Figure 4.24, 100% of Y1, Y2, Y3, and Y4 participants chose "yes" as their response to the question. Therefore, all students believe graphicacy is relevant and important in technical education. The reasons for their response to question 17 and 20 will be discussed in section 4.2.2, in the qualitative findings, at question 18 and 21.

The quantitative findings from this study focused predominantly on the PS teacher's oracy and graphicacy knowledge on related skills, their perceptions of their confidence in these areas, and modules in the undergraduate programme where they felt helped develop these skills. The findings showcased the difference in terminology used by PS teachers throughout the four years, with years three and four listing more complex terms and skills related to oracy and graphicacy compared to years one and two. A commonality for all years was the modules which were ranked in order, each cohort selected the 'school placement' and 'graphics' related modules as first on their lists for developing their oracy and graphicacy skills for their current year.

Figure 4.24

Importance of Graphicacy in Technical Education (Author's Original)



Having presented the findings for the quantitative data, the next section presents the qualitative findings from the questionnaire.

4.2.2 Qualitative Findings

This section explores the qualitative findings from the PS teacher questionnaire. The questions that will be presented in this chapter are two, three, 13, 14, 15, 16, 18, 21, 23, 24, 25, 26, and 27. These questions were created to be answered qualitatively using text box style questions, despite the fact that the majority of the questions on the list previous are analysed in a quantitative fashion. This explains why these questions are included in the qualitative findings. These questions include findings on both oracy and graphicacy in the ITE programme in ATU and will be displayed in sequence as listed above.

The questionnaire was designed to encapsulate the participants' perceptions of the meaning of the terms 'oracy' and 'graphicacy' in their own words. Question two asked the participants to: "Explain the term 'Oracy' in your own words" and the responses that were given have been collated in a frequency table filtered by keywords that were stated in their responses. The table includes a list of the keywords, the year group of the student, the frequency of how many times the keyword was mentioned, and the percentage of the total. The grey boxes indicate the number zero which means the keyword was not mentioned by any students of that particular year group. The table is presented with the highest frequency and percentage at the top of the table and the lowest frequency and percentage at the bottom of the table. (See Appendix 13 for an example).

Table 4.1 demonstrates that the most frequently used keywords which were common to students from Y1 to Y4, to define oracy were 'ability' (18%), 'express' (11%), 'speak' (11%), 'speech'/ 'voice'/ 'conversation' (9%), 'terms'/ 'words' (8%), 'communicate' (7%), and 'talk' (7%). Taking these most frequently mentioned words from the PS teachers and comparing them to the authors definition of the term 'oracy' which was developed for the purpose of this study, it suggests that the PS teachers have a basic level of understanding of the term. They have a general understanding that oracy relates to the ability of using the voice to 'speak' or 'talk', using 'terms' or 'words' to engage in a 'conversation'. When the responses from each year group were broken down, it became evident that the Y4 PS teachers obtain a broader understanding of the term 'oracy' compared to Y1 PS teachers.

Table 4.1

Oracy Keywords and Frequency percentage: PS Teachers (Author's Original)

Keywords:	1st Year	2nd Year	3rd Year	4th Year	Total
Ability	10	10	7	7	34 (18%)
Express	11	6	2	2	21 (11%)
Speak	8	7	2	3	20 (11%)
Speech/ Voice/ Conversation	5	4	5	3	17 (9%)
Terms/ Words	4	3	5	4	16 (8%)
Communicate	3	3	4	3	13 (7%)
Talk	6	3	1	3	13 (7%)
Read/ Interpret/ Understand	1	2	6	2	11 (6%)
Verbal	1	2	3	1	7 (4%)
Language		2	4	1	7 (4%)
Explain	3	1	3		7 (4%)
Ideas/ Thoughts	2	1	1	2	6 (3%)
Grammar/ Grammatically	3	3			6 (3%)
Pronounce/ Pronunciation		1	1	2	4 (2%)
Confident/ Confidently	3				3 (2%)
Listening	2				2 (1%)

The table below displays the top five most frequently used words by each year group. The term 'talk' indicates a more basic understanding of oracy, and it is a term used by first- and second-year PS teachers. It is placed 4th by Y1 PS teachers, 5th by Y2 PS teachers, and does not appear in the top five most frequent cited terms by Y3 PS teachers as it was mentioned just once, and it was mentioned 3 times by Y4 PS teachers. The table below represents the top five frequently used terms to define oracy by Y1 to Y4 and includes the frequency by which they were mentioned also.

Table 4.2

Top 5 Most Used Terms to Explain Oracy by PS Teachers (Author's Original)

Rank	1st Year		2nd Year		3rd Year		4th Year	
	Keyword	F	Keyword	F	Keyword	F	Keyword	F
1st	Express	11	Ability	10	Ability	7	Ability	7
2nd	Ability	10	Speak	7	Read/ Interpret/ Understand	6	Terms/ Words	4
3rd	Speak	8	Express	6	a) Speech/ Voice/ Conversation b) Terms/ Words	5	a) Speech/ Voice/ Conversation b) Speak c) Talk d) Communicate	3
4th	a) Talk b) Confident/ Confidently	6	Speech/ Voice/ Conversation	4	a) Communicate b) Language	4	a) Read/ Interpret/ Understand b) Pronounce/ Pronunciation c) Ideas/ Thoughts d) Express	2
5th	Speech/ Voice/ Conversation	5	a) Terms/ Words b) Communicate c) Talk d) Grammar/ Grammatically	3	a) Verbal b) Explain	3	a) Language b) Verbal	1

*Key: F = frequency

Some examples of the responses from years one to four, which include the word 'talk' are presented below:

"To be able to express yourself through talking"

"Something about speech or talk, expressions through speech"

"Express yourself while talking"

"Explaining things by talking"

"Being able to talk to people professional and correctly."

"… oracy is the use of talking and listening during learning"

(Y1 participants)

"Oracy is the use of talking"

"is oral skills , how focusing on talking out or expressing themselves clearly"

"I think oracy is the ability to talk and express yourself."

(Y2 participants)

"Give the students talking tasks, and tools while they meet in groups or discussions."

(Y3 participant)

"The ability to interpret and talk spoken word."

"Oracy is the ability to speak, to discuss and and being able to talk through your reasoning behind your thoughts."

"One's ability to communicate verbally. Reading/Talking."

(Y4 participants)

Less than 10% of the PS teachers referred to oracy as being a 'skill', 4 of these being Y1 participants, one Y2, two Y3's, and one Y4. They described oracy as 'oral skills' (n=3), 'oral communication skills' (n=1), 'language skills' (n=1), 'language and speaking skills' (n=1), 'the skill of being able to orally communicate' (n=1), and 'speaking and vocalising skills' (n=1). Words such as 'grammar/ grammatically' (n=6) and 'ideas/ thoughts' (n=6) were used less frequently compared to others and one of the least mentioned keywords was 'confident/ confidently' (n=3). Each of these terms were only mentioned by Y1 participants, as they associated oracy skills as "being able to speak properly in a confident way" and to "communicate confidently and openly".

Oracy involves two aspects, the aspect of production, which is speaking, and the aspect of reception, which is listening. From analysing the responses from Y1 to Y4, it was evident that most PS teachers disconnect the aspect of production (speaking) from the aspect of reception (listening). A total of 81 responses have been collated, two of which responses mentioned the aspect of listening as being associated with oracy, both responses were from Y1 participants. Their responses are presented below:

> “Oracy is the use of talking and listening during learning”
>
> “Oral skills, teaching/learning through speaking and listening”

Question three of the questionnaire asked PS teachers to: “Explain the term ‘Graphicacy’ in your own words:”. Graphicacy was defined by the author in Chapter Two as the ability to use, create, and mentally manipulate maps, images, diagrams, and other forms of visual and spatial documents as tools to communicate spatial information. The keywords from the responses from the PS teachers were noted and collated in a table below. The table is structured the same as the previous table on oracy, listing the keywords, year groups, frequency, and percentages of the total. Also refer to Appendix 13.

It is evident from the analysis of the responses from PS teachers that they have a good understanding that graphicacy is closely related to the ability to understand or read graphical representations, such as ‘drawings’ (n=24), ‘maps’ (n=18), ‘images/ videos/ media’ (n=15), and ‘sketches’ (n=14). Another notable finding was how PS teachers mention the abilities to ‘read’ (n=9), ‘understand’ (n=27), and ‘visualize’ (n=13) graphical representations, which are linked to the reception of graphicacy, and therefore pay less attention to the ability to ‘communicate’ (n=11), or ‘present’ (n=10) graphically, which is associated with the production of graphicacy.

The terms ‘visual/visualise’ (n=13) was mentioned less than 6% by Y1 participants, this was the lowest percentage out of the four year groups. Following on from the lowest percentage, just over 22% of Y2 participants mentioned these terms. Y3 participants mentioned these terms most frequent, with 25% of the year group referencing them. Falling just below the Y3 group, 23% of the Y4 participants used the terms ‘visual/ visualise’.

Table 4.3

Graphicacy Keywords and Frequency Percentage: PS Teachers (Author’s Original)

Keywords:	1st	2nd	3rd	4th	Total
Ability	7	11	9	6	33 (15%)
Understand	11	7	5	4	27 (12%)
Drawings	7	6	7	4	24 (11%)
Maps	8		3	7	18 (8%)
Images/ Videos/ Media	6	1	6	2	15 (7%)
Sketches	4	2	5	3	14 (6%)
Visual/ Visualise	2	4	4	3	13 (6%)
Communicate		4	5	2	11 (5%)
Convey/ Present / Presentation	2	1	5	2	10 (5%)
Read	5	1		3	9 (4%)
Thoughts/ Ideas/ Emotions	1	2	2	2	7 (3%)
Graphics	1	4	2		7 (3%)
Diagram	3	1	2	1	7 (3%)
Charts	2		3		5 (2%)
Skills	1			4	5 (2%)
Express	1	2	1		4 (2%)
3 Dimensional		1		2	3 (1%)
Plans	1		1		2 (1%)
2 Dimensional				2	2 (1%)
Problem/ Problem Solving	1			1	2 (1%)
Real/ Everyday life			1	1	2 (1%)
Number line				1	1 (0.5%)
Spatial Awareness		1			1 (0.5%)

Some examples of how these terms were used in their definition of graphicacy are stated below:

"Learning through Visual"

(Y1 participant)

"The ability to look at a visual information display (poster etc) and understand it"

(Y2 participant)

"The use of drawing, sketching and visualisation"

"Graphicacy is the ability to visualise and understand graphical representations and drawings"

(Y3 participants)

"The ability to see images on paper and being able to visualise what they look like in real life"

"Graphicacy relates to sketching and developing visualisation skills"

(Y4 participants)

Another finding was the number of PS teachers who did not link graphicacy to 3-Dimensional or 2-Dimensional. Both '2 Dimensional' (n=2) and '3 Dimensional' (n=3) were not mentioned at all by Y1 or Y3 participants, one Y2 participant mentioned '3 dimensional' only, and two Y4's mentioned both '2 dimensional' and '3 dimensional'.

". . . ability to perceive something in 3D space."

(Y2 participants)

"Developing skills relating to drawing, and visualising 2-D to 3-D"

"Graphicacy is the skill someone has to link 2D to 3D."

(Y4 participants)

Graphicacy has been related to ‘real/ everyday life’ (n=2) by one Y3 participant and one Y4 participant in their responses, see below:

“Using pictures on your slides relating to everyday life to help any visual learners, having an equal amount of pictures to text, or using pictures to describe the text.”

(Y3 participant)

“The ability to see images on paper and being able to visualise what they look like in real life”

(Y4 participant)

“A persons ‘special [spatial] awareness’ or ability to perceive something in 3D space.”

(Y2 participant)

Only 1% of the total responses from PS teachers mentioned ‘problem/ problem solve’ (n=2) as being an aspect of graphicacy, 1 response from a Y1 participant and 1 response from a Y4 participant.

“The ability to communicate or problem solve using maps, diagrams, drawings and imagery”

(Y4 participant)

“Explaining a problem with images or drawing”

(Y1 participant)

Question 13 of the PS teacher questionnaire asked participants “While on the B.Sc in Education programme, how have you learned to promote Oracy in the classroom?”, their responses are discussed next.

The most common responses throughout years one to four to promote oracy in the classroom included the keywords “discussion” (n=15), “group work” (n=12), “presentations/ presenting” (n=9) and “debates” (n=7). Examples of the responses which included these keywords can be seen below.

Discussion:

> “Discussion – get the students to talk about the topic being taught and their feelings towards it” (Y4 PS teacher)

> “Create class discussions instead of teacher led, get the students to speak up” (Y3 PS teacher)

> “By starting classroom discussions and asking students for their opinions, allowing students to ask for help from each other and allowing them to work together to complete a task.” (Y2 PS teacher)

> “encourage discussion, allow the students to explain to others whats going on” (Y1 PS teacher)

Group work:

> “Group work assigning roles, changing the roles every time so everyone gets to be the presenter at some stage” (Y4 PS teacher)

> “By incorporating group work lessons and to encourage cooperative learning” (Y3 PS teacher)

> “Group work helps engage students” (Y1 PS teacher)

Presentations:

> “I have been taught how to conduct presentations in the classroom” (Y4 PS teacher)

> “Presentations- getting stduents [students] to speak among the class” (Y3 PS teacher)

“Presenting in-front of lecturers and peers.” (Y1 PS teacher)

Debates:

“To try and engage students in debates and show the students to scaffold their answers” (Y3 PS teacher)

“… get your voice heard and debate your ideas to the class.” (Y2 PS teacher)

“… have debates get them to explain their answer” (Y1 PS teacher)

Although these were the most common responses for this question, other methods PS teachers have learned to promote oracy on the programme can be seen in Table 4.4.

Table 4.4

Methods to Promote Oracy (Author’s Original)

Keywords/ phrases:		
peer-teach	Continuous assessment	Thinking through
sharing opinions/ views	co-operative learning	peer-review
assigning roles in groups	Student led classes	reading aloud
open/ closed questions	word walls	questions
key words	speeches	body language
microteaching	exit cards	breakout/ group discussions
flipped classroom	Applications (Kahoot, MS Teams)	spoken essays

Question 14 of the PS teacher questionnaire asked participants: “While on the B. Sc in Education programme, how have you learned to promote Graphicacy in the classroom?”. The results from this question revealed the four most common methods of promoting graphicacy on the ITE programme, those were “sketching” (n=11), “models” (n=7), “working drawings” (n=7) and “graphs” (n=7). Selected examples of how these keywords/ methods were mentioned by participants can be seen below.

Sketching:

> "I have been taught to make sure to implement freehand sketching wherever possible to improve graphicacy." (Y4 PS teacher)

> "Getting students to practice there drawings and sketching" (Y2 PS teacher)

> "Try include pictures/sketches/diagrams to help aid people to understand a topic." (Y1 PS teacher)

Models:

> "I have learnt to make meaningful models that have good learning to them and helps the student make the link from 2D to 3D" (Y4 PS teacher)

> "Ask students to create posters and models to help the learning in the classroom." (Y3 PS teacher)

> "modules including Applied Graphics, Education Projects and Architectural Design have involved us in the creation of a variety of animated PowerPoint's, Solidworks models and AutoCAD files" (Y3 PS teacher)

Working drawings:

> "creating working drawings" (Y4 PS teacher)

> "getting students to follow working drawings" (Y3 PS teacher)

> "Using diagrams and working drawings is the best way to interpret how a project is to be completed" (Y1 PS teacher)

Graphs:

> "the use of graphs for representing data" (Y4 PS teacher)

> "we are encouraged to use graphs and diagrams and images along with text to explain topics" (Y2 PS teacher)

Other responses, less common between participants can be seen in the table below. The table includes keywords and phrases which were used by participants.

Table 4.5

Promoting Graphicacy: Least Frequent Key Words and Phrases (Author's Original)

Keywords/ phrases:		
Design	Linking 2D to 3D	Marking out
Posters	Assignments	UDL (Universal Design for Learning)
Animations	Presentation	Drawing on the board
Diagrams	Worksheets	Pictionary (game)
Pictures	Number lines	Group work
Mindmaps	Application to real life	Calculating measurements

Question 15 asked PS teachers: "What assessment methods do you use to assess Oracy in your classroom?". The results have been analysed and collated in Figure 4.25.

Figure 4.25

Oracy Assessment Methods Utilised by PS Teachers (Author's Original)

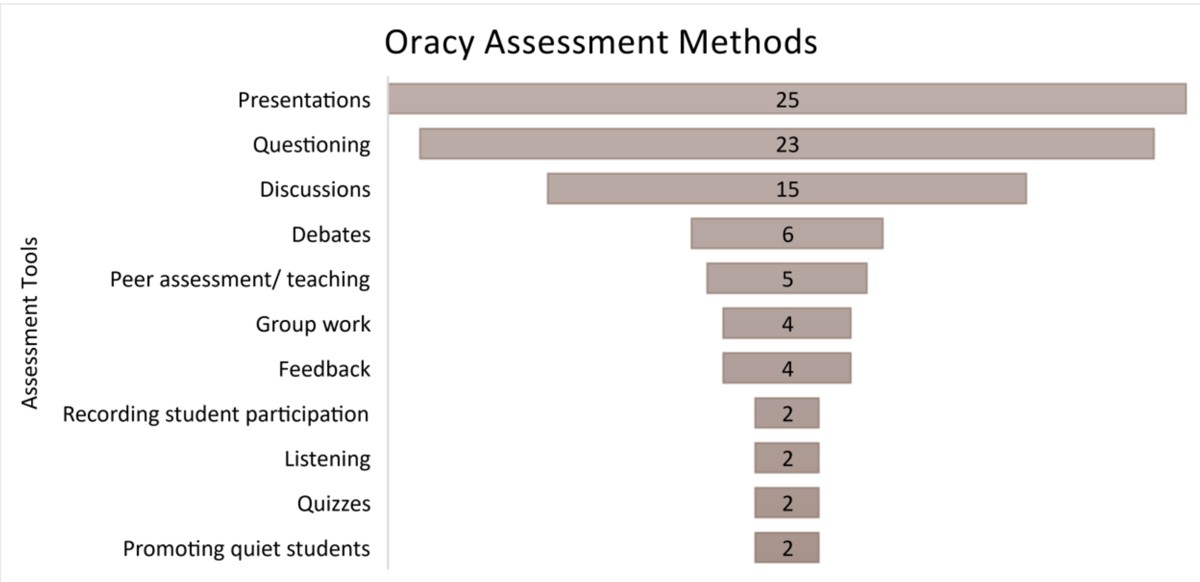
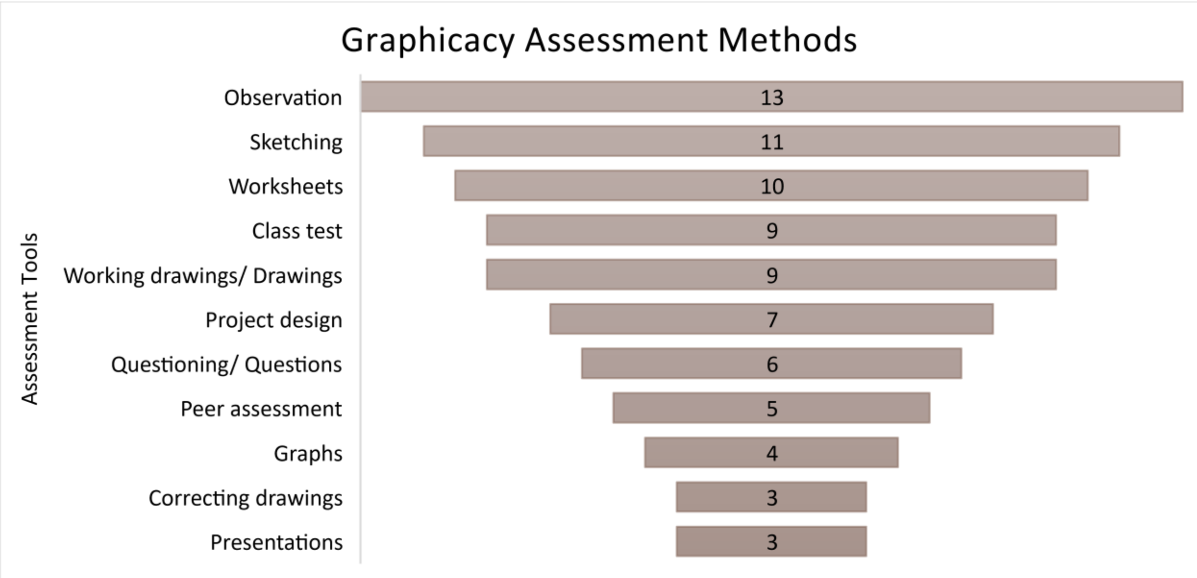


Figure 4.25 displays a number of assessment tools which have been utilised by PS teachers from years one to four. They are listed in accordance to most frequently mentioned at the top and the least frequent at the bottom. The most common assessment tool used to assess oracy development by PS teachers is “presentations” with 31% of students listing it in their responses to this question. This followed closely by “questioning” which is used by another 28% of this cohort. Coming in third place on the table above is the value of including “discussions” into a lesson to help gauge oracy development, with 19% PS teachers including this tool into their practice. The bottom of the table displays four assessment tools which were the least popular assessment tools, these include “recording student participation”, “listening”, “quizzes” and “promoting quiet students” in the class, these assessment tools have been utilised by just 2% of the overall cohort. Assessment strategies such as “group work” and “feedback” have been used by 5% of PS teachers, which are just above “recording student participation”, “listening”, “quizzes” and “promoting quiet students” on the table. Lastly, the third least used assessment tool amongst this group is “peer assessment/ peer teaching” with 6% including this strategy in their lessons to assess student oracy development in the technical classroom. Two Y1 students, and one Y2 student was not able to give an answer for this question when asked, and one Y2 student replied with “I haven’t assessed it”.

Question 16 relates to graphicacy as it asks participants “What assessment methods do you use to assess Graphicacy in your classroom?”, the findings are structured similarly to the previous question, question 15. The most popular assessment tool used by 16% of PS teachers to assess graphicacy was “observation”, visually assessing the class by monitoring the classroom. This was followed by the response “sketching” which comprised of 14% of the cohort. 12% of PS teachers use “worksheets” as a mode of assessments with another 11% using “class tests” and “working drawings/ drawings” to gauge student progress. In the middle of our table, we have “project design” which was listed by 9% of the participants. Working from the bottom up, 4% of the PS teachers listed mentioning "correcting drawings" in class and this was the same percentage for using "presentations" as an assessment tool. 5% of students like to include "graphs" along with 6% of the cohort using a variety of "peer-assessment" methods. "Questioning/ questions" fell just shy of the most popular assessment tools with just 7% of the groups applying it in their own classroom.

Figure 4.26

Graphicacy Assessment Methods Utilised by PS Teachers (Author's Original)



Although not displayed in Figure 4.26, two Y2 students responded saying they were unsure, and another second-year student replied saying they "… haven't assessed it". Similarly, in Y1 there were there were issues answering this question, as three students did not respond, and another student responded with "I don't know".

Question 18 asked the questionnaire participants: "Why do you think Oracy skills ARE important in Technical Education?". (Providing context, this was a follow-on question from number 17: "Do you think Oracy skills are important in Technical Education?" see

Section 4.2.1). An example of some of the responses from years one to four are displayed in Table 4.6.

Table 4.6

Importance of Oracy: A PS Teacher's View (Author's Original)

Importance of Oracy in Technical Education from a PS Teacher's Perspective	
1st Year	
1A	they are important as you can't have effective teaching without it
1B	So that the students can understand in depth
1C	You need to have good Oracy skills so the students are able to understand what is being explained and demonstrated
2nd Year	
2A	It's important to be able to describe a project or what you are trying to achieve when designing/making a project
2B	Oracy is a huge part of tech education as you need to have the ability to communicate tech graph to the students effectively and without this it's near impossible to teach.
2C	discussing designs with teachers and classmates
3rd Year	
3A	We should not limit ourselves to our own subjects. We are there to teach all aspects. Oracy is a life skill that is needed. It is needed in all subjects.
3B	we need to be able to work together and share ideas to improve problem solving oracy is the most efficent [efficient] way to do so it is our primary tool of communication
3C	I think Oracy is incredibly important in Technical Education. As many of the concepts are quite abstract it is vitally important to be concise and clear when conveying information, in order to not confuse students. Also, much of the terminology and principles are specific to the technical subjects, so it is important to ensure students are comfortable using the terms and can convey their ideas, with both me as the teacher, and their peers.
4th Year	
4A	It is important that the students have confidence and are able to express their learning orally. Although it is important to highlight that some students may prefer to express their learning in other ways. Being able to speak is important in developing communication, interpersonal skills
4B	To be able to describe what one is doing, oracy is needed to give a detailed description for a person who is not technically minded
4C	Improves students' confidence and makes the classroom more active

PS teachers gave many different reasons as to why they thought oracy was important in technical education, some of them remarked oracy as a life skill, a primary tool of communication, and mentioned how oracy is required for effective teaching and learning. A portion of this group mentioned how oracy is needed to improve student's confidence in the classroom and how greater confidence within students could contribute to a more active classroom environment for learning. With regards to technical education, few PS teachers mentioned how necessary the use of correct technical terminology is when teaching the technical subjects as many terms are specific to these subjects. Next, the reasoning behind why PS teachers feel graphicacy is important in technical education will be explained.

Question 21, like above, follows on from the previous question 20, which had asked the participants: “Do you think Graphicacy skills ARE important in Technical Education?”. Question 21 asked: “Why do you think Graphicacy skills ARE important in Technical Education?” A representative sample of responses from participants are shown in the table 4.7.

Many PS teachers stressed the importance of graphicacy in technical education for the development of visualisation skills in terms of 2D to 3D representation and the communication of design and ideas. A participant mentioned how graphicacy skills are a woven requirement through many jobs and are important in everyday life. It was mentioned how teachers must use multi-modal teaching strategies to cater for the different learning abilities of students and how graphicacy can help bridge the language barrier gap amongst students and teachers. The participants also mentioned how important graphicacy was in technical education as the subjects require many practical elements such as drawing and sketching, and because of how heavily dependent these subjects are on graphicacy skills teachers of these subjects must be able to model best practice regarding this area. The suggestions of improvement for the ITE programme regarding oracy will be discussed following Table 4.7

Table 4.7

Importance of Graphicacy: A PS Teacher's View (Author's Original)

Importance of Graphicacy in Technical Education from a PS Teacher's Perspective	
1st Year	
1A	Because it's a very practical learning which involves lots of drawings, such as sketching, drawing and technical drawing
1B	using graphicacy skills in technical education helps the students to visualize and to understand the topic to be learnt
1C	It is important to be able to show what you mean in every possible way as a teacher so that everybody can understand
2nd Year	
2A	So you can visualise the drawings and it will aid you when drawing
2B	To allow you to show your idea on paper as well as understand others' ideas.
2C	students need to be able to visualize if their struggling to understand it verbally
3rd Year	
3A	Graphicacy is hugely important as it is the primary means we use to convey information for a lot of our content. Like I said above many of the ideas are also quite abstract, and it can be more concise to use graphics in order to convey this information. For example, in graphics it is quicker and easier to explain a graphical concept using graphics, rather than try to wholly explain using oral means. Also, in Woodwork and construction many of the ideas we look at can't be reproduced in the classroom, so intelligent use of images and graphics can give students a tangible idea of the concepts and material, in an engaging and concise manner.
3B	Graphicacy is used to portray an idea visually. This can toss the language barrier and may speed things up
3C	Students of Technical Education courses need a very strong ability in the area of graphicacy to visualize and conceptualise things. They need to be able to communicate ideas and designs and to graphically portray information.
4th Year	
4A	Yes, they are extremely important for teachers of our subjects as they are required in every class that we are involved in and the teacher must be able to model best graphicacy skills.
4B	Graphicacy skills are important in creating the link from 2D to 3D in everyday life. A lot of jobs have a level of graphicacy skills needed in them and it is a great skill to develop
4C	Graphs portray information to technical people, people who internet graphs can portray this out into their work. In techno-education, graphs are very important to show information, sketches are used to show ideas of a potential project for example a wooden chair in wood technology. Construction studies has plans of houses and areas such as planning permission so graphicacy is promoted here

Question 25 asked the participants: "What suggestions, if any, do you have to help improve the development of Oracy skills on the B. Sc in Education Programme?". While 48% (n=39) of participants from years one to four left this question blank or replied saying no, or that they were content with the programme and no improvements were necessary, more than half of the participants gave suggestions for improving the development of oracy on the programme. Table 4.8 explores these suggestions.

Table 4.8

PS Teacher Suggestions: ITE Oracy Improvement (Author's Original)

Suggestions for Improvement for Developing Oracy Skills on the ITE Programme	
1st Year	
1A	Practice more public speaking
1B	Hosting a group podcast wold [would] be a great way to develop oracy skills on the course
1C	more debates when in the class to improve communication
2nd Year	
2A	go a bit more in depth in class with real life examples for both subjects.
2B	Just make students a bit more aware of it and help them understand the importance.
2C	give greater examples of strategies, give students a better outline or definition of what it is, explanations can be too vague
3rd Year	
3A	More workshops or information sessions on how to promote or incorporate them in lessons in a fun and relevant way
3B	More explanation on each in first year and examples on how to put into lesson plans in first year. Opportunity to improve ourselves. I know in our class our grammar may not be great and as a tutor put it, it can be unscholarly. It would be good if these issues were addressed in first year.
3C	I think debating is a very useful skill to have, and can be utilised in the classroom to get students to analyse their opinions rather than just settle on a choice. I think more formal use and exposure to this method of assessment would be very valuable.
4th Year	
4A	… out line what oracy is early in the programme for student teachers and give several examples… also how it can be incorporated in the class
4B	There should be more emphasis on public speaking in year 1 and 2 – more presentation etc.
4C	as Covid impacted learning and online learning became the norm, these skills would certainly be at risk as neither social interaction nor practical skills can be applied. To develop oracy Zoom calls would be an option. As part of the programme, I suggest that every week a student be assigned to interact through learning with another student. Each week a student "meets" a different student and that way the class get to interact and discuss the learning topic.

PS teachers made a number of suggestions regarding oracy skill development improvements on the ITE programme, some suggested more practice in areas like public speaking and debating. Others suggested that a more in-depth explanation and earlier introduction to oracy in Y1 on the programme would result in improvement. More PS teachers explained how there was a need for the exploration of practical teaching strategies and methodologies pertaining to the technical subjects and for these to be utilised in the classroom. Using technologies like Zoom and creating group podcasts was another suggestion by participants to improve oracy development. One PS teacher suggested having an oracy workshop or information session to explore this skill and learn to incorporate it in an enjoyable way in the classroom. Suggestions of improvement regarding graphicacy development will be explored next.

Question 26 asked the participants: “What suggestions, if any, do you have to help improve the development of Graphicacy skills on the B.Sc in Education Programme?”. While 47% (n=38) of participants from years one to four left this question blank or replied saying no, or that they were content with the programme and no improvements were necessary. Table 4.9 explores these suggestions.

Table 4.9

PS Teacher Suggestions: ITE Oracy Improvement (Author’s Original)

Suggestions for Improvement for Developing Graphicacy Skills on the ITE Programme	
1st Year	
1A	More accessible software to create visual means of learning
1B	More time for tech graphics in first year would be a help as that is one of the best ways to get an understanding of this topic
1C	Using graphs and whiteboards to share ideas
2nd Year	
2A	Have more of a lesson on how to promote it as it is vital in teaching but don’t really have a set module on it
2B	give the students more examples of how to include it into lessons
2C	Give the students ideas and examples of making visual aids
3rd Year	
3A	I think if we possibly had some more formal explicit training on how to incorporate graphicacy, the best ways to animate powerpoints, how best to compile poster etc. I think this would be very valuable, as an unclear graphic can do more harm than good, so I think it’s important we know the different between good and bad graphics and how to improve our graphics.
3B	Have more lectures on how to use the app PowerPoint bringing the like of Solidworks models in and cad files.
3C	be given more examples of active learning strategies to have a better understanding of what active learning is, then its easier to create new active learning strategies to enhance/incorporate graphicacy in the classroom making it more engaging for students.
4th Year	
4A	We should give demonstrations to the class a few times a year, each one in different topics ideally. Homework questions would be helpful.
4B	Incorporate more sketching in line with the DCG assignment at leaving cert.
4C	More graphics and SolidWorks contact hours

Many PS teachers suggested additional and explicit training for graphicacy which should include tutorials on how to animate PowerPoints, compile posters, and create visual aids appropriately, as well as SolidWorks training. A couple of participants suggested that more contact hours for graphics throughout the programme would be helpful with some examples of teaching and active learning strategies to promote and incorporate graphicacy development. A participant mentioned how having more accessible software would help, another mentioned how incorporating more classroom demonstrations regarding the graphics module topics accompanied by homework questions would improve competency in this area. It is important to acknowledge that graduate students of the ITE programme may be more equipped to answer this question as they have completed all four years of the undergraduate programme. Therefore, PS teachers in year one to four could only comment on their experiences of the programme so far which may not be a true reflection of the programme.

Lastly, question 27 asked participants to “Please add any further comments if you wish”, although the majority of the participants did not leave any comments, those that did mentioned the importance of oracy and graphicacy and linked their importance with their role in everyday life. Their responses are:

> “(I) [t]hink oracy and graphicacy are the two main most important techniques in teaching as they keep students most interested and engaged” (Y1 PS Teacher)
>
> “Graphicy (graphicacy) and oracy play a huge part in the later life of students as there is a need for it when you are talking to people or throng (trying) to understand graphical information. The way … graphicy (graphicacy) and oracy are used in teaching now is a huge improvement.” (Y2 PS Teacher)
>
> “Oracy and [g]raphicacy are as important in our subjects as [n]umeracy and [l]iteracy in my opinion” (Y4 PS Teacher)

> “Constant reminders to pre-service teachers the importance of oracy and [g]raphicacy in the classroom and the fact that they are key skills not only in a classroom but for everyday life” (Y4 PS Teacher)

A Y2 participant commented on how they felt regarding both oracy and graphicacy in terms of how they are taught on the ITE programme as they said:

> “I feel as though there is a lot of talk about how important it (oracy and/or graphicacy) is but not a lot of teaching of how to implement it or assess it” (Y2 PS Teacher)

This section outlined the qualitative findings from the PS teacher questionnaire. The qualitative data recorded focused on the areas of oracy and graphicacy definitions, methods of promoting and assessing these skills, the importance of oracy and graphicacy in technical education, and suggestion of improvement for the ITE programme. Overall, the PS teachers were able to share a number of different definitions, teaching and assessment methodologies, and suggestions of improvement. The most common oracy assessment methodology being presentations, and the most common graphicacy assessment methodology being presentations. Lastly, All of the PS teachers from each cohort were of the same opinion that oracy and graphicacy are important in technical education. Next, section 4.3 concludes chapter four, the questionnaire research findings and analysis.

4.3 Conclusion

Addressing objective four, this chapter set out to present the findings and analysis of the PS students’ questionnaires. Quantitative and qualitative data were presented in turn, and frequencies systematically recorded. With respect to oracy and graphicacy, from the PS student perspective, a number of key findings arise out of this chapter. A finding in relation to oracy: throughout the four years, it was apparent that awareness of oracy definition, skills, and methods increased from years one to four. This was seen as years three and four gave greater definitions and more detailed and wider ranges of teaching and learning strategies for oracy in comparison to years one and two. Another finding was the misconception of the production and reception elements of oracy, many understood that oracy is the ability to communicate using your voice by speaking but many disregarded the element of oracy which involved reception skills, such as listening. When asked to rank modules according to oracy development, each year group chose the ‘School Placement’ module. This is one of the modules that explicitly teaches oracy as opposed to other modules that teach oracy implicitly; possibly this outcome is due to the students being more accustomed with hearing the term “oracy” explicitly throughout this module.

Moving on to graphicacy, again, like oracy, years three and four appeared to have a greater understanding of graphicacy as they gave more detailed responses and used more complex language to describe graphicacy in comparison to years one and two. Spatial ability was an aspect of graphicacy which was not considered by many participants. Although participants rated themselves much more confident in graphicacy skills in general and within individual graphicacy skills over oracy, although were least confident across year groups in their freehand sketching skills. When raking graphicacy skills development by module, the directly related graphics subject modules ranked the highest out of each year, again possible due to “graphics” being embedded in the name of the module. For both oracy and graphicacy, it was suggested by many participants that some sort of training or workshop would encourage development in these areas on the programme, to share detailed definitions and teaching strategies along with technology tutorials.

In the following chapter (Chapter Five), the qualitative results and analysis arising from both the lecturer focus group and the two programme management interviews will be presented.

Chapter Five. Focus Group and Interviews: Findings and Analysis

5.1 Introduction

Following on from the previous chapter and continuing to address objective five of this research study, the research findings and analysis of the qualitative data from the focus group and interviews are discussed in this chapter. Firstly, a detailed account of the specific data analysis methodology employed is provided, namely a thematic analysis approach, including inductive coding (Section 5.2). This is to demonstrate the systematic and rigorous nature of the analysis. Following this, the analysis narrative is organised according to the five dominant themes generated from the inductive thematic analysis process (Sections 5.3 to 5.7). These themes are: terminology, teaching, learning and assessment strategies, benefits, barriers and further generated themes.

5.2 Theme 1: Oracy and Graphicacy Terminology

The meaning of the term's "oracy" and "graphicacy" was discussed with all participants of this study, PS teachers, lecturers, and management staff. The PS teachers' definitions of these terms were previously outlined in section 4.3 (Questions Two and Three). The following section addresses the responses of lecturing and management staff who were similarly asked to define the terms oracy and graphicacy during the focus group and interviews. Their responses are explored sequentially below, beginning with the lecturers' focus group, and progressing to the managers' interviews. Lecturers and managers are represented by the code letters L and M respectively; individuals are letter coded and numbered for distinction purposes.

5.2.1 Defining Oracy

At the outset of this study, oracy was simply defined as a starting point as "… the capacity to use speech, express thoughts and communicate clearly with others" (Section 1.1). This definition, which was distilled from an initial investigation of the literature, was further expanded in the subsequent more in-depth literature investigation (Chapter Two). From analysing the lecturer focus group responses, it was evident that some staff members had a deeper understanding of oracy, and what it encompasses, than others. In some cases, confusion, and a general lack of knowledge as to the meaning of the term was in evidence. L5 mentioned that oracy was "not something that I've been consciously thinking of" and L6 commented: "I couldn't claim to be very informed" but described oracy as "the ability to communicate what's going on inside your head effectively, … to put your thoughts into someone else's head orally". Keywords and concepts that were cited in the focus group discussion included: "fluency", "verbal communication", the ability to communicate through the use of "verbal cues" in terms of "body movement, gestures, (and) eye contact", "mannerisms", "colloquialisms", "voice manipulation", and "diction". More subtle understandings of oracy were also identified. L1 described oracy as "quite complex" as it involves "know(ing) when to be quiet, knowing when to project the voice and, diction …". L3 commented: "it's communicating orally, but it's also not just what you say but, it's how you're … saying it, so your actual mannerisms, your … presentation skills, and as well … as your ability to … formulate … your ideas.". They also added how oracy plays a role in "how succinct you are at phrasing something". L2 described oracy to be:

> Your ability to communicate … your ideas and … your thoughts and your feelings, and to be able to … capture that in a way that articulates what you're feeling and what you're thinking, and to be able to verbalize that and to be able to communicate that to other people so that they get a full understanding of what you're thinking and how you're feeling.

The group was made of a range of lecturers and managers from a broad range of specializations. This would explain the disparity in definition, and this also indicates a need for a specific policy outlining a consistent definition for these areas.

From a managerial perspective, M1 stated that “while (the terms) oration and/ or orator would have been more familiar to me, oracy itself was a term that I’d probably only begun to hear and understand in the last three years”. He associated oracy with the involvement of “verbal communication and verbal cues”. When asked did the definition of oracy change in the context of the department or programme, M1 defined oracy as the ability “for student teachers to be able to communicate clearly in a verbal sense, but also with regards to related cues”. M2 defined oracy as “fluency … within the spoken language” initially, then in the context of the programme as “the fluency around the technical language that is special to our subject area” and described how oracy within the programme “might be more focused towards having a competency in the oracy to do with the technical … language that we use in drawing and … teaching and … woodwork”.

5.2.2 Defining Graphicacy

The focus group and interview discussions were examined in a similar method for graphicacy. L2 began the conversation by defining graphicacy as “anything to do with symbols and understanding information in a way that’s not text or not verbally spoken… symbols or icons or diagrams or sketches or maps or anything of that variety that’s … quite visual”. She described graphicacy as the notion of graphical thinking and its relation to visio-spatial ability, suggesting that graphicacy is “being able to think graphically, being able to understand graphically and then be able to communicate graphically … that would be, kind of things like visual spatial ability … being able to hold the image in your mind, being able to move things around”. Added to these concepts, the ability to “problem solve” was also proposed by L3 who also described graphicacy as the “… ability to solve problems…”.

L3 described how graphicacy involves the manipulation of objects and surroundings as they detailed the process of “being able to hold the image in your mind, being able to move things around … that’s all … the processing side of it (graphicacy)”. L6 defined graphicacy as “the ability to understand visually through icons and shapes and interpretations of … markings on paper rather than remembering and processing instructions verbally and orally”, as he gave the example of needing directions. He explained how receiving directions verbally wouldn’t be as helpful to him as receiving a map drawn on paper. In sum, the dominant themes arising from the lecturers responses in relation to clarifying what is meant by the term “graphicacy” were: visio-spatial ability, graphical thinking, and problem-solving ability.

Moving to the interviews with managers, M1 defined graphicacy as the “way of communicating a thought or a process through visual representation and visual communication skills” and mentioned how graphicacy may “align well with visual learners”. When defining the term graphicacy, M1 added that he “would be more familiar with that kind of language … then oracy in that sense”. M2 described graphicacy as the “written equivalent of that (oracy)” as he said its “the ability to articulate an idea”. He added how graphicacy encompassed skills such as “penmanship” as well as the aspect of fluency in “both technical graphics and … freehand drawing”.

As a side from defining graphicacy other information came up in conversation from L2 and L3 which stemmed from their previous readings. L2 and L3 mentioned the significance of the word “spatial” in relation to defining graphicacy. Adding to this, L2 proposed that gender may be linked with graphicacy, stating: “… men are better at reading maps than women are… it’s probably to do with the … side of the brain that you’re using because it’s … spatial intelligence”. L3 responded to this comment citing research that involved the “…visual spatial ability and gender for horses (where) apparently male horses have a higher visual spatial ability than female horses". Although graphicacy and gender was not a topic of interest for this particular study it may be something which could be researched further.

5.3 Theme 2: Teaching, Learning, and Assessment Strategies

This theme discusses a variety of subthemes such as oracy and graphicacy development, assessment, explicit teaching of oracy and graphicacy, the implementation of these skills on the ITE programme, as well as the disconnect between PS teacher's learning and practice, all of which directly relate to teaching, learning and assessment strategies.

Overall oracy development including the development of individual skills which encompass oracy, was discussed amongst lecturers and managerial staff. M6 spoke of the effectiveness of communication and referred to an article he read about people who test well. Although two people may have identical knowledge, he explained, if one has better communication skills, they may be seen as "more capable… in that subject area". L4 supported this claim by stating that those who are better communicators are "coming across at a different level than somebody who may not have the oracy skills to communicate their ideas." L6 continued from his first point by mentioning that he had read in one of the baby books that babies go through a stage of development where they find it difficult to express "their thoughts and needs to their parents." He went on to explain how this inability to express itself can frustrate the baby as they start to grow. This comment made by L6 put in perspective the value of oracy skills and the adverse impacts that poor communication can have. Another topic of conversation was program-specific oracy strategies and current module practices.

L1 explained how she uses Albert Bandura's theory of modelling to explicitly teach PS teachers oracy by saying something such as: "we're now looking at an oracy exercise".

She continued by giving examples of how oracy has been developed throughout the programme in past years, these strategies included public speeches, class debates, presentations, round robin, and creating videos. Throughout presentation rehearsals L1 mentioned how she gives feedback to the students focusing on key areas like “diction, projection, and timing, … tone … (and) getting an animated voice showing a bit of passion”. In addition to the programme’s oracy strategies, L1 made a comment regarding a disconnect between what is being taught and how that has been followed through in terms of oracy development, to the PS teacher classrooms. When observing students on school placement she mentioned how students used “very lower level” strategies such as “questions and answers and … the word wall” and continued to say that (these are) the two “things they seem to think it (oracy) is”. She also expressed how she thought:

> [I]f students more explicitly got … lists of all of the multiple ways you can do oracy … (and) all of the multiple ways (to) … promote graphicacy and really … push that when they’re planning their planning grids and lessons … it might help them to demonstrate it more, and then it will become more of a conversation.

This concept of explicitly teaching these skills was something which came up in the responses from the PS teacher questionnaire in terms of suggestions for improvement for the ITE programme also as they stated the need for more practical examples of each.

In relation to the implementation of oracy and graphicacy skills development onto the programme there were many suggestions made by both lecturing staff and management, including the processes in which they would have to go through. According to M1, defining the terms would be a useful place for PS instructors and lecturers to start regarding implementation. He suggested that these definitions should then be reinforced throughout the programme by lecturers by incorporating them as important criteria for lesson plans, reflections, and schemes of work. M1 also mentioned how the institute organized a drama teacher which was brought into teach the PS teachers voice skills at one point in the past. M2 also brought up the idea of using drama lessons to promote the development of oracy, saying, “maybe if you got … involved in some amateur dramatics … that would encourage people … to be able to project their voice and … enunciation maybe a bit more clearly”. M1 and M2 both mentioned how a workshop would help improve knowledge of these skills on the programme and suggested how the possible development of a strategic and coherent plan for both oracy and graphicacy would help encourage consistency across the programme.

M1 explained how changes to the programme may be discussed amongst lecturers at programme board meetings as he stated:

> … we discuss changes, amendments, plans, so sometimes it’s a case of doing workshops with staff that you know you can do a subtle approach and then ask staff to consider where that could be … added more formally, and if you were to change modules or insert lines around oracy and graphicacy within modules it would be done at times … like … the programmatic review.

Although there was a discussion about making changes and adding to the ITE current programme M2 mentioned how the programme is “so packed with content already” and it would be difficult to add more content, but rather than adding more content he suggested how:

> [I]t could be a matter of going back to look at some of the pedagogy modules and seeing maybe redesigning some of those rather than adding something extra, another layer of skills and … competencies that we want students to learn. Maybe the job of work there is to integrate … an overt reference to oracy in some of the assessments that are that are already in the program.

This leads us on to the assessment of these skills, L3 and L4 gave examples of current assessments and assignments that are in place in their modules. L3 discussed how they carry out an assignment which focuses on both oracy and graphicacy through a recorded visualiser demonstration of a graphic drawing exercises. The assignment includes some assessment criteria such as their ability to explain the concepts as well as the use of their technical language throughout the recording. L4 mentioned how Y1 participants were given an assignment involving a 90 second speech, which involved a lot of rehearsal and they “later video record(ed) themselves”. She reflected on how “there was quite a lot of feedback and over and back with those until they were finalised”. L1 spoke of issues she experienced regarding the school placement assessment rubric, she mentioned how literacy, numeracy, oracy and graphicacy are all assessable requirements on the rubric but how time limitations result in an unjustified assessment of both oracy and graphicacy as she stated, “I don’t give enough time to exploring those two aspects”. Although she also mentioned how she is conscious that she is “only hearing … word wall and … questions and answers” which she considered “very lower level”. The study now turns to theme three, which discusses benefits for PS teachers.

5.4 Theme 3: Benefits for Pre-Service Teachers

This theme discusses the relevance of oracy and graphicacy skills development and competency for PS teachers, as well as the role of a professional teacher and the advantages of applying diverse pedagogical approaches to foster growth.

Effective communication requires oracy skills. M1 emphasizes the importance of oracy skills for “being able to express yourself clearly and to be understood in your expression”. L4 listed skills such as presentations, debates, and speeches as an example of those which require oracy skills, stating that people with oracy proficiency are “coming across at a different level than somebody who may not have the oracy skills to communicate their ideas”. L1 stated how “there are quite a lot of elements and the confidence that goes with verbally expressing precision of communication, or for getting your idea from your mind across you might have to draft it by script, maybe several times before you have a precise message to say”. When giving explanations or instructions to a class, it is important to be as precise and clear as possible. L4 described how oracy is “an ongoing process of learning” as you must be conscious when speaking so that you try “to change and use better … more fluent … grammar… throughout your speaking no matter where you are”. L1 explains how important it is to have a narrative when speaking, as she said “we’re preparing students for a conference, and it’s all about what’s your story? What’s the narrative? … can you tell the story … in a way that flows?”. L1 concluded her statement by saying “it’s everywhere … it’s complex”.

The role of oracy as a professional was another topic of conversation which arose during the focus group and interviews. L1 referred to the oracy skills needed by teachers when she remarked, “there are so many types of verbal expressions that you need to pull together”. The importance of “being able to express yourself clearly and to be understood in your expression” was stressed by M1 in the context of teaching and learning, he also linked deficiencies such as poor spelling with lack of professionalism as he said, “it looks very bad … when you’re presenting to a group of young students and things aren’t being spelled right or things aren’t being presented right”. L6 discussed how teachers take on the role of a performer when it comes to speaking. He reflected on his own practice, as he said “I know very well I’m putting on a performance because the way I speak in a class, the way I speak in a recorded video is very different to my normal speaking voice and the way I explain things now” and he also acknowledged that he “should make better efforts to improve my [his] diction while I’m [he’s] speaking normally as well”. Lastly M1, made a comment on the importance of different teacher traits and skills as he said, “I don’t think you can extract oracy and graphicacy out of all of the other traits and … skills that … teachers need”. Each mode of communication is just as vital as the next.

Woven throughout the conversation amongst lecturers were the multi-modal teaching and learning strategies they have adapted in their practice to teach the alternative communication types. Visual and holistic learners were a common topic of conversation amongst lecturers. L5 discovered she was a visual learner, and as a result she said that when she is “explaining something to students … (she) would draw diagrams on the board” to aid them. M2 explained how he recently has been using a whiteboard feature on his 2 in 1 laptop/ tablet to incorporate sketches and drawings into his class, the feature allows him to sketch on the screen with a stylus which can then be connected to a larger screen or projector. L1 mentioned how in her own practice she likes to “verbally explain something and then show a graphicacy representation” as she suggests that “both together works better than anything … rather than one or the other, … it seems to have more effect”. She reflected on her recent practice, the effectiveness of using digital mind maps as she concluded that they are:

> [A] really great help to explain a complex idea in … a one stop shop, … I was thinking of … holistic learners that like to see the whole picture before they go into the nitty gritty details so an infographic can give you the whole picture on one slide, an overview position without a whole lot of words, and I think that’s really effective.

L4 spoke of the importance of a working drawing and the information it holds for the manufacturing of projects, as she explained how lecturers must contain “the ability to present that information graphically, and that is easily consumed by the students that they can … understand what that information means from a working drawing”. She described working drawings as “the road map into making the project” and continued to say that “images are … telling so much of what … we’re doing and it’s just hugely important, the words just aren't enough". In terms of both oracy and graphicacy development L3 described a tiered process to the development of these skills within the programme. The process involved 3 steps, 1) lecturer's use of oracy and graphicacy skills to communicate subject material effectively, 2) the development of PS teacher's oracy and graphicacy skills to communicate subject material well to their own pupils 3) their ability to comprehend oracy and graphicacy as a discrete skill to be taught explicitly to their pupils.

> We're trying to use oracy ourselves when it comes to communicating with them. Then they're trying to develop their own oracy so they can communicate with their own students, and then they're trying to develop oracy with their own students. (Lecturer 3)

Lastly, L5 described how she reflects on her communication practices as she said, "how I improve is … just reflecting on how I didn't communicate", she continued this conversation by explaining this reflection process as she asks herself questions such as "how did I not get that message across?". It is this reflection process that is valuable for professional development as it allows an individual to think of better methods or ways to carry out a task, in this case, communicate. As theme three focused on the benefits of oracy and graphicacy for PS teachers, the study turns to theme four where the barriers to oracy and graphicacy will be discussed.

5.5 Theme 4: Barriers to Oracy and Graphicacy

During interviews with lecturing and management staff, it became clear that there were various hurdles to oracy and graphicacy growth on the programme, mostly due to issues such as training, impacting factors, and the disconnect between theory and practice for PS teachers.

In terms of teacher education, L5 stated that she felt “a bit of a loss… not being trained in that way” because she entered the profession “at a different time”. She went on to say that “people … who’ve been teacher trained are much more aware of it (oracy), much more adept at doing it, and being aware of the importance of it”. L5 appears to have been under the impression that persons who have obtained teacher training have formal training in both oracy and graphicacy. In terms of staff training for these abilities, lecture staff concurred that they had had no official training but were open to the possibility of being trained, as L5 responded, “I think it would be terrific”.

Many impactful aspects emerged throughout the discussions on the development of oracy and graphicacy on the programme. L5 acknowledged the implication of COVID-19 on the development of graphicacy skills such as sketching. She noted that when learning went online, PS teachers “haven’t been doing lot of sketching … they were designing and they were doing research, so they weren’t focusing on sketching”. L5 emphasized that sketching has “got to be practical, hands on”. M1 noted “how challenging it is for students coming through the education system now and the high dependency on technology” before explaining how “people have less confidence in things like their spelling” because of technology. Although technology has had many good effects on education, this statement reminds us of some of the unnoticed negative effects.

Another impacting factor according to L1 is how oracy and graphicacy skills have been introduced by staff in their own independent practice but they “haven’t actually done that as a group (or) as a team” and continued to say how “that would be really, really helpful”. M2 had a similar thought about oracy as he said, “I think how we could improve would be … if we actually had a … clear strategy on it”. He also listed examples of oracy development strategies that have been done on the programme but added the factor of consistency, as he said, “we haven’t done it consistently”. M2 suggested that “there’s an opportunity for every lecture in every module to .. have a contribution to make in improving oracy competencies” but in contrast when speaking of graphicacy he stated that “graphicacy is probably (more) narrow focused”, as he continued to say, “it’s maybe a bit more limited to the … modules that have a graphical content to them”. This contributes to being an impacting factor as it is suggesting that those who lecture on the graphics modules should take ownership in developing graphicacy skills, but as L1 stated earlier, implementing these skills as a team would be more helpful.

In terms of assessment on School Placement, a rubric is used to grade the PS teacher’s performance. The rubric contains many criteria which includes literacy, numeracy, graphicacy and oracy. L1 mentioned that because there are many elements on the rubric, she “never quite get(s) as far as the oracy (and) graphicacy” elements, implying that maybe time restrictions effect the quality of assessment in these skills. Although when assessing, L1 is aware that she is only hearing “very lower level” examples such as “word wall and … questions and answers”. This point links back to theme two (section 5.4) as a disconnect between PS teacher’s learning and practice can be seen as they give limited examples of oracy and graphicacy teaching strategies.

When asked if oracy was adequately emphasised on the ITE programme M2 replied by saying “that’s problematic”, and continued to explain:

> … when people come onto the programme they’ve already had … 14 years of formal education, in which the assumption is that students have got those basic building blocks in primary and secondary school … Adequate emphasis, you see, I’m not sure. To what extent (is it) our duty to take on … teaching, a level of oracy? … The assumption is it should already be there, but we … know in practice for a lot of the times it isn’t.

M2 suggests asking the questions “is this our job?” and “how much knowledge can we assume students have received in primary and secondary school before entering third level?" in terms of oracy development, both of which are important questions to ask and both of which have an impact on the development of these skills on the ITE programme. Chapter five will close with section 5.6 the conclusion.

5.6 Conclusion

This chapter aimed to showcase the qualitative results and findings from the focus group with lecturing staff as well as the two interviews with those in management, to address objective five of the research project. To remind the reader, objective five of the project is: to conduct a primary case study within one technical teacher education programme, in order to critically assess current levels of oracy and graphicacy knowledge and skills (see Section 1.2). The results were displayed through themes which explored oracy and graphicacy terminology, teaching, learning and assessment strategies, benefits of oracy and graphicacy capabilities for PS teachers, and lastly, barriers to oracy and graphicacy, respectively. Next, according to their derived themes, the primary findings from this chapter will be outlined, beginning with the definitions of oracy and graphicacy.

When asked to define oracy and graphicacy there was a mix of responses. It was evident that some participants had a clearer understanding of the terms and the skills they encompass than others. Some participants openly acknowledged that they had little experience or knowledge of these concepts but rather contained a general idea of what was meant by the terms. Overall, both lecturing staff and management were able to define both oracy and graphicacy quite well. Theme two explored findings related to teaching, learning, and assessment strategies. Lecturing staff and management were in agreeance that the skills of oracy and graphicacy need to be taught in an explicit manner according to a consistent strategy. Some PS teacher's suggested using Albert Bandura's modelling theory, implementing workshops for both lecturers and PS teachers to upskill and develop knowledge of both concepts, and how the development of both an oracy and a graphicacy strategic plan would encourage consistency across the programme. Developing a definition for both terms was suggested as being a starting point which should then be implemented and reinforced by all staff. Although it was mentioned how the current programme is very compact, minor changes to assessments to include oracy and graphicacy criteria could be possible.

Theme three discussed findings around the topic of benefits for PS teachers, which included the importance of oracy and graphicacy, their role as a professional teacher, and the importance of adverse methodological teaching approaches to foster growth in these areas. The lecturing staff and management spoke about teachers having good communication skills as a professional trait that enhances a teacher's public image. It was discussed how factors like poor spelling can give a poor impression when presenting to a class. Lecturers shared their own personal teaching pedagogies that they adapt in their own practice on the programme to aid visual and holistic learners.

Lastly, theme four discusses the barriers to oracy and graphicacy. These barriers include training, impacting factors, and the disconnect between theory and practice for PS teachers. Training was a factor which was discussed with lecturing and managerial staff which gained a common response. All participants agreed that they have received no formal training regarding oracy and graphicacy during their career lecturing on the programme, which is a negative contributing factor to development and growth in these areas. Some impacting factors included the COVID-19 situation and the lost physical in-class contact time and the disconnect between what PS teachers have been practicing and learning on the programme and how that has not followed through to their own classrooms. The following section draws a general conclusion from both the quantitative and the qualitative data accompanied by relevant literature in the field of oracy and graphicacy development.

Chapter Six. General Discussion

6.1 Introduction

This chapter continues to address objective five of the study, namely, to conduct a primary case study within one technical TE programme, in order to critically assess current levels of oracy and graphicacy knowledge and skills. It does so in the form of a discussion of the main findings in dialogue with the literature. The previous chapters four and five, presented the research findings, and an analysis of findings, from the PS teacher questionnaires, the lecturer focus group, and the management interviews. This discussion chapter is structured in four parts which aligns with the dominant themes from Chapter Three. The themes will address the predominant findings pertaining to this research, which are: defining terminology, the idea of being explicit when teaching concepts, oracy reception and production skills, oracy and graphicacy skills development, and oracy and graphicacy ITE development strategies*.* Each section is organized with the inclusion of literature findings (see Chapter Two), followed by research findings and analysis (see Chapters Three, Four, and Five), as well as new and pertinent material that is incorporated throughout. Lastly, this chapter's discussion will contribute to the development of a research response, namely an oracy and graphicacy training workshop explicitly tailored for the case study programme that aims to enhance oracy and graphicacy skills and knowledge development and practice. (This latter aspect is further expanded in chapter seven).

6.2 Oracy and Graphicacy Terminology

As the literature expressed in Chapter Two, there is more than one definition of oracy to date. The term oracy has become to encompass much more than its original definition by Wilkinson (1965), this was evident within the definitions given by lecturing and management staff as they supplied a much wider definition of oracy in comparison to the original. The ability to define oracy and graphicacy terminology was tested and measured through the responses from PS teacher questionnaires (section 4.2), a lecturer focus group (section 5.3), and two management interviews (section 5.3). The research findings revealed that the PS teachers were able to give a more basic level definition of the term “oracy”. This conclusion was drawn as the PS teachers used lower-level terms like “speak”, “talk”, and “speech” when describing oracy. It was evident that the majority of Y3 and Y4 gave a more rounded definition of oracy over Y1 and Y2. One factor which helped to determine this was the use of the term “talk” when describing oracy by Y1 and Y2. The term “talk” would be considered a lower-level description of oracy as oracy includes much more thought and processing. Overall, the PS teachers gave a definition similar to its original definition by Wilkinson (1965), which was “the ability to use the oral skills of speaking and listening” (p. 13). Lecturing and management staff were able to outline a more distinguished and complex definition of oracy as they used terms such as “voice manipulation”, “diction”, “colloquialisms”, “verbal cues” and “articulate” when defining the term. It appears from the study that there seems to be an incremental approach to developing an understanding of oracy. This is evident as there is a noticeable development in definition from PS teachers from Y1 to Y4 and then further again to the staff’s level of understanding.

Throughout the literature pertaining to oracy, it was obvious that the aspect of listening is crucial in terms of oracy and speech development. The receptive aspect of oracy, listening, was identified in the literature as an essential aspect of effective oral communication by a number of sources (Mercer et al., 2017; Wilkinson, 1970; Wulandari & Hustarna, 2020; PDST, 2014; MTSS, 2022). Wilkinson (1970) pushed the point that without speaking there would be no need for listening in educational practice. Wulandari et al. (2020) stated that for effective two-way communication to take place, speaking and listening must not be separated. Oracy related frameworks such as Voice 21’s Framework, PDST’s Framework, and the ICPALER Framework (see Section 2.4.1) all include listening as an important element of oracy and oracy development. Levy (2013) mentioned the complexity of teaching, understanding, and assessing the skill of listening and considered it one of the most transient aspects of all language abilities. Considering its relevance in the literature, this receptive aspect of oracy was not acknowledged or referred to by the majority of PS teachers, lecturers, and management staff when defining oracy. Only two Y1 PS teachers mentioned the listening aspect of oracy in their definition. When this question expanded to listing the skills of oracy, 18 PS teachers listed listening as a skill although many left this out of their original definitions. Listening was mentioned by L6 and M2 in terms of oracy development by means of recording and listening back although aside from this instance, listening was not associated with oracy by the staff.

Given the definitions they provided in the questionnaire, it was clear from the PS teachers' responses that they generally have a good understanding of what graphicacy is. To refresh the reader's memory, in Chapter Two graphicacy is given a working definition which is 'the ability to use, create, and mentally manipulate maps, images, diagrams, and other forms of visual and spatial documents as tools to communicate spatial information.'

Giving the original definition by Balchin and Coleman (1965) and comparing that to the responses of the PS teachers, there is a strong correlation specifically on the latter end of the original definition. Like oracy, there are two aspects of graphicacy, the ability to understand and the ability to communicate. Half of the PS teachers from Y2 to Y4, and the majority of Y1 participants understood graphicacy to be the ability to understand and interpret drawings, maps, images, and other forms of media with the remainder referring to the communicating aspect of the term as well. According to the definitions provided by PS teachers, the majority of Y1 participants left out the ability to communicate graphically and instead concentrated on one's ability to interpret, understand, read, use, or visualize information. Based off this result it would appear that as a whole, Y1 PS teachers contain a lower-level definition in comparison to other years. Another finding from the questionnaire results was PS teachers narrowly defining and linking graphicacy with the subject of graphics rather than incorporating the wider understanding of graphicacy outside of the subject. Such a siloing of Graphicacy to their own specific subject could potentially result in a loss of educational opportunities that may be found by linking graphicacy with other subject areas and to the wider world. Lecturing and management staff on the other hand gave much more detail when defining graphicacy. Words they used to describe graphicacy were visual spatial, graphical thinking, problem solve, penmanship and manipulation. L2 incorporated the ability to think graphically, understand graphically, followed by the ability to communicate graphically into their definition of graphicacy, which gave three dimensions to graphicacy.

The PS teacher questionnaire gave students a platform to outline their confidence level in both oracy and graphicacy. The results revealed that the PS teachers were much more confident in their graphicacy skills compared to their skills in oracy. The documentary analysis of the MD displayed 69 instances throughout the descriptors where graphicacy was mentioned compared to 49 instances for oracy. Perhaps the PS teacher's confidence in graphicacy is due to more opportunities given to develop these skills on the programme, although graphicacy was not explicitly mentioned in any of the MD.

6.3 Teaching, Learning, and Assessment

The concept of explicitly teaching oracy and graphicacy skills was a topic which was evident in the PS teacher responses and the discussion amongst lecturing staff on the ITE programme. The 'School Placement' module came out on top for each year of the programme when PS teachers were asked to rank the modules from highest to lowest where they developed their oracy skills the most. This result was expected for years one and two as the 'School Placement 1' and 'School Placement 2' MD mentioned oracy explicitly and referred to oracy the most out of all modules for both of these years. Although this wasn't the case for Y4, 'School Placement 4' was the only Y4 module that explicitly referenced oracy in the MD, however, the 'Professional Studies' MD implicitly referred to oracy most frequent out of all Y4 modules. L1 (a lecturer of School Placement) mentioned how she teaches oracy explicitly through modelling, which aligns with the results from PS teachers.

When asked to rank modules according to graphicacy development the direct graphics-related modules were selected for each group. The four modules which were ranked number one by years one to four all include the word “graphics” in the module name, for example, Technical Graphics, Graphics and Computer Applications, Applied Graphics, and Advanced Graphics. Although none of these modules explicitly mentioned the term “graphicacy” throughout their MD it was partially included in the module titles. The emphasis of the graphic-related modules is on broader aspects of graphicacy, such as the cognitive process involved in visual interpretation. PS teachers may associate the design modules with a limited definition of graphicacy because they would primarily experience and concentrate on the communicative practical part of graphicacy, such as drawing, in these modules. However, it must be stated that the documentary analysis found that although not mentioned explicitly, graphicacy was very much evident implicitly throughout the MD for these modules. The MD analysis revealed that Y1 module ‘Design Elements’ contained the most implicit evidence of graphicacy although was narrowly overshone by ‘Technical Graphics’. Similarly, Y2 module ‘Materials and Sustainability’ contained equal opportunities for graphicacy in the MD but ‘Graphics and Computer Applications’ was ranked first as opposed to seventh. These findings suggest that the factor of explicitly may have had a role to play with the outcome.

Both PS teachers and lecturing staff mentioned how explicitly teaching both oracy and graphicacy would help improve the level of understanding of the terms. This idea was mirrored in the literature pertaining to both oracy and graphicacy. Kaldahl (2019) mentioned how oracy is very rarely taught explicitly but how it is important for school, working life and society, and how it is crucial for oracy to be established on its own as a discipline rather than being associated with other literacies (Kaldahl et al., 2019). Voice21 believe that oracy must be guided by teachers in a deliberately explicit and systematic manor in order for children to progress their oracy capabilities (Voice21, 2019). In terms of graphicacy, Wilmot (1999) referenced a study which stated that children who have been taught explicitly have benefitted from the experience (Wilmot, 1999). A Y3 PS teacher suggested how “formal explicit training on how to incorporate graphicacy” would better their understanding of graphicacy and how to develop the skills with their class. Others mentioned creating posters, visual aids, SolidWorks, and PowerPoint animations as areas they would like to be explicitly taught in. L1 also suggested the idea of giving PS teachers explicit lists of ways they could promote oracy and graphicacy development and how this might lead into deeper conversations on the concepts. From both literature and the responses from the participants it is fair to suggest that explicitly teaching both oracy and graphicacy would encourage the development and awareness of these skills throughout the programme.

6.4 Benefits

A number of benefits were identified in the study (see Section 5.5), including the importance of oracy and graphicacy metacognition, the relevance of these skills beyond education, their role as a professional teacher, and the benefits of oracy and graphicacy as part of a multi-modal teaching approach. Each will be examined in turn.

The findings from the study revealed that PS teachers and staff were able to recognise the importance of oracy and graphicacy in education and its relevance and benefits in technical education. PS teachers acknowledged the importance of oracy in building confident speakers and communicators and how oracy can contribute to creating an active learning environment amongst students as they work together to solve problems and peer-teach. Many PS teachers recognised the significance of a teacher being able to understand graphicacy to then be able to follow through and teach their students graphicacy for them to understand it. The awareness of the relevance of graphicacy within the technical subjects was something a Y4 participant was able to identify as they mentioned “they [graphicacy skills] are extremely important for teachers of our subjects as they are required in every class that we are involved in ...” (Y4 PS Teacher). One participant proposed that “graphicacy skills are nearly key in technical education, [student] teachers need to have a strong understanding of this to teach students” (Y1 PS Teacher). A similar response was given by a Y2 participant when asked to give reason to why graphicacy skills are important in technical education, they replied “[b]ecause if you don’t have the skills, how are you meant to [teach] the subject if you can’t do it yourself[?], so it’s vital you have the right skills to be able to teach and help students through graphicacy.” (Y2 PS Teacher). This tiered approach of understanding and teaching came to light in the conversation with lecturing staff on the programme too. Taking this point from a ITE lecturer’s perspective, L3 explained their role in understanding and teaching oracy as he stated:

> [W]e’re trying to use oracy ourselves when it comes to communicating with them [PS Teachers], then they’re trying to develop their own oracy so they can communicate with their own students, and then they’re trying to develop oracy with their own students.

The necessity of teachers having metacognitive awareness is highlighted by Nordin and Yunus (2020), who also discuss how having this knowledge can improve both a teacher’s practice and a student’s academic progress. They state that “teachers are required to think metacognitively themselves to ensure that they can teach metacognitive thinking” (Nordin & Yunus, 2020, p. 464). This same idea applies to the effective teaching of both oracy and graphicacy; having an awareness and understanding of these skills to teach both skills to students. A study conducted by Bangkom and Sukavatee (2021) supports the results of this study as they revealed how oracy proficiency is highly related to that of metacognitive knowledge.

PS teachers recognised the significance of oracy and graphicacy skills and the role they play in everyday life and identified areas where these skills could be applied outside of the classroom. A number of students mentioned the importance of developing oracy and graphicacy skills in technical education as they believed that these skills were not only applicable to the technical subjects but were also necessary skills for everyday life. A Y3 participant listed a small sample of occupations where they believed obtaining a high level of graphicacy skills were crucial, these were “woodworkers, engineers or map surveyors” (Y3 PS Teacher). A Y4 PS teacher offered another example of how graphicacy abilities may be used outside of the classroom. They discussed how having skills in this area is critical in the event of hiking, and they supported this by explaining the importance of knowing your location and picking the safest paths. Other life skills such as interpersonal skills as well as problem solving skills were linked to the development of both oracy and graphicacy skills respectively.

The ITE lectures in the case study engaged in a conversation about interpreting area directions, whether verbally or visually, and while there were differing personal opinions and experiences on which was more effective, it was an area that expressed the value of oracy and graphicacy in the context of everyday life skills. According to Jackson (2014), oracy prevails in ensuring learning standards are met as they consider oral communication skills “one of the most desired graduate employability skills” (Jackson, 2014). In an interview with Rich (2021), Deanna Dannels shared the importance of oracy in a broader international context as she explained how “[o]ur world is rapidly becoming more interdisciplinary, more multi-modal and more multi-contextual. In order to navigate those contexts, students need to be able to show a proficiency in oral communication.”. In terms of graphicacy beyond the classroom Khine (2016) proposed that the “Spatial ability of students in several disciplines is of greatest importance in terms of their professional achievement" (p. 54). Both the academic research and the study's findings support the notion that oral and graphical communication abilities play a significant role in professional success and are widely used in our daily lives.

The PS teachers and lecturing staff emphasized the importance of oracy and graphicacy for strengthening communication skills and fulfilling the role of a professional teacher. A PS teacher expressed that without graphicacy capabilities you "cant have good teaching techniques" (Y1 PS Teacher), another Y3 participant mentioned the importance for the technical subjects as they explained how "it [graphicacy] is the primary means we use to convey information for a lot of our content" (Y3 PS Teacher). In terms of oracy, L1 stated that to be effective as a teacher you must combine a number of different types of oracy (Lecturer 1). L6 and L4 had the same shared opinion that having strong communication skills can help others see and appreciate your expertise in a certain area or field. L4 summarised this point by saying:

> [Y]ou may have the knowledge, but without the skill set to express that knowledge or to communicate that knowledge . . . they're [people are] coming across at a different level than somebody who may not have the oracy skills to communicate their ideas.

A paper written by Wienclaw (2021) supported this claim by L4 and L6 as she discussed the importance of communications in the workplace. She noted that "[n]o matter how good one's technical skills or how innovative one's ideas, if not communicated clearly to others, they are irrelevant." (Wienclaw, 2021). Jaca et al. (2020) and Khan et al. (2017) are both in agreeance that communication skills are essential skills of both a professional teacher and PS teachers (Jaca & Javines, 2020; Khan et al., 2017). Khan et al. (2017) highlights the importance of effective communication skills for teaching, its role in managing the classroom, as well as its role with communicating and building relationships through interaction with the students (Khan et al., 2017). Graphical literacy is acknowledged as a key skill by Sagasti-escalona (2020), who expressed that as a result of the digital revolution, communication has shifted to place a greater emphasis on the visual (Sagasti-escalona, 2020).

The benefits of oracy and graphicacy, as part of a multimodal teaching and learning strategy, were also highlighted in the research. PS teachers expressed the importance of communicating “what you mean in every possible way as a teacher so that everybody can understand” (Y1 PS Teacher). Others supported the idea of pairing both the visual with the verbal as they acknowledge that “every learner is different and learns in different ways. Some learn from visuals and others from reading and writing” (Y2 PS Teacher). This idea of multimodal teaching was evident from the lecturer’s perspective as they shared varieties of teaching and learning strategies that they utilise in their own professional teaching practice. They suggested adapting a holistic and multimodal teaching approach as it has many advantages for students as it fosters their growth. The views of the lecturing staff are supported by Mayer (1997) as they suggest that adapting a multimedia (multi-modal) approach by pairing visual representations with verbal representations of the same material allows for meaningful learning to occur. This suggests that the findings from this study support existing literature.

The emphasis on the importance of visual communication as part of a multimodal strategy is evident in the literature. Gates (2017) revealed that subjects like mathematics have a higher dependency on text and language explanation style to teaching and rely less on other forms of communication such as the visual aspect, whereas in technology education this differs. He states that technology education is quite opposite as it contains a higher reliance on the visual communication aspect due the nature of the subjects as they focus on real life, physical artefacts opposed to more abstract concepts (Gates, 2017).

6.5 Barriers

Barriers to oracy and graphicacy development highlighted by PS teachers and staff were evident in the findings of this study. Some of which included the lack of formal training in both areas, the disconnect between theory and practice for PS teachers, and impacting factors. Each will be discussed in turn.

From the discussion with lecturers on the ITE programme it became apparent that none of the lecturing staff have engaged with any formal training regarding oracy and graphicacy throughout their professional careers. Although none of the PS teachers stated that they haven't undergone formal training in these areas they did acknowledge the need for it, as they suggested it would make an improvement. Y3 PS teacher mentioned the possibility of how "some more formal explicit training on how to incorporate graphicacy, the best ways to animate PowerPoints, how best to compile poster etc." would help improve graphicacy, as they added how they thought it "would be very valuable" (Y3 PS Teacher). Another Y3 PS Teacher suggested how "[m]ore workshops or information sessions on how to promote or incorporate them (oracy and graphicacy) in lessons in a fun and relevant way" (Y3 PS Teacher) would help improve oracy and graphicacy skills on the programme.

Aligning with the PS teachers, lecturing staff were also open to the idea of a training workshop to further develop these skills. M1 and M2 both agreed that there was no training regarding these skills on the ITE programme although M1 stated that they have "never had a request for that specifically" from the staff. However, M2 suggested that "the workshop could be … the start of the conversation as to ... what do we want to do ... to improve the oracy skills". The findings from the research suggest that there is a need for a comprehensive training workshop for oracy and graphicacy from all perspectives, PS teachers, lecturing staff, and management. According to Kapur (2020), workshops are essential for fostering student learning, inspiring students to pursue education, and contributing to the improvement of students' skills and abilities.

Another barrier to oracy and graphicacy development which was evident from the research findings was the lack of consistency regarding the development of these skills across the programme. This was a finding that was evident from the focus group and staff interviews since it is more focused with the development and delivery of the programme; thus, it was not an issue raised by PS teachers. According to L1, oracy and graphicacy skills have been introduced by staff in their own independent practice although they "haven't actually done that as a group (or) as a team" (L1) but it was suggested that by doing so, it would be very helpful. M2 suggested a similar approach as he said, "I think how we could improve would be … if we actually had a … clear strategy on it (oracy)".

M2 listed examples of oracy development strategies that have been carried out on the programme previously but added "we haven't done it consistently" (M2). M2 also recognised that "there's an opportunity for every lecture in every module to ... have a contribution to make in improving oracy competencies" but in contrast when speaking of graphicacy he stated that "graphicacy is probably (more) narrow focused", as he continued to say, "it's maybe a bit more limited to the ... modules that have a graphical content to them" (M2). According to Kaldahl et al. (2019) oracy is interconnected with other literacies and abilities and should be promoted "as a discipline on its own" (p. 2). Although this point was focused on oracy development it could be applied to graphicacy skills also. It may seem fair to argue that the notion of consistency in teaching both oracy and graphicacy could reduce the obligation placed on individuals in specific oracy or graphicacy dominant modules, as it becomes a team effort and responsibility to integrate these abilities throughout all modules. According to Soni (2020):

> If the leader distributes the work amongst the team members th[e]n the team members may also seek knowledge in equal proportion. This will ensure that the team will be directed in one direction instead of running in different paths due to team leaders not being concise and consistent with their instructions. (p. 47)

Yussif (2021) suggests that there are a number of benefits to consistency in the classroom, some of which include the promotion of student success and its effectiveness for developing positive habits such as learning itself. Driessen and Sleegers (2000) also highlight the importance of consistency for effective teaching but suggest it be paired with an integrated approach according to the class level. In addition to this they cite Chitty (1997) who claims that there is a positive impact on student progress in schools when all teachers implement guidelines in a collectively uniform manner.

Another issue which appeared from the findings was the PS teacher's lack of confidence in their personal sketching abilities. From all the graphical skills listed in question 10 of the questionnaire (see Section 4.2.1), freehand sketching was the skill in which all years were least confident in. When this finding was shared with lecturing staff, L5 acknowledged how they "understand that they're (the PS teachers) not confident in drawings" (L5) and also mentioned how this is something they're "seriously, seriously concerned about" (L5). Some of the contributing factors for this finding according to L5 included the loss of physical in class contact hours due to the implication of COVID-19, along with the limited number of class hours scheduled for this module within the programme, as learning to sketch is only one element of this module.

When asked what suggestions you have to help improve graphicacy development on the ITE programme, a couple of PS teachers mentioned how "incorporating more sketching" (Y4 PS Teacher) and "more drawing" (Y1 PS Teacher) would help improve graphicacy skills on the programme. With the development of the technology subjects towards a more creative focus, freehand sketching ability is very important for PS teachers. Lane et al. (2009) highlights the connection between freehand sketching and education, cognitive processing, and economic benefits, as well as acknowledging the importance of this skill within technical teachers. A study they conducted questioned if freehand sketching ability could be taught, acquired, and applied by persons who regarded themselves to have inadequate sketching ability to begin with; the findings were declared effective because participants made significant improvements (Lane, Seery, & Gordon, 2009).

A more recent study carried out by Booth et al. (2016) revealed that with the implementation of an in -class workshop focusing on developing freehand sketching skills with a group of novice engineer designers helped to improve students' confidence in their abilities. They also began to "view sketching in as an essential design skill" (p. 19), as their overall level of comfort with sketching increased after the workshop. This suggests that with the implementation of a freehand sketching workshop within ITE programme, this could encourage a heightened confidence within PS teachers regarding their freehand sketching skills.

Finally, another impediment to this study was the poor response rate from Y4 students on the PS teacher ITE programme. The Y4 cohort had the lowest response rate among all cohorts, with only 62% of PS teachers responding by questionnaire. This was a challenge for the study as the responses provided by Y4 may not accurately represent the full Y4 cohort, resulting in less credible results when compared to other cohorts with a higher rate of response. Low representativeness, according to Goodwin et al. (2020), can have an impact on a study's validity and the ability to generalize the findings to a larger group. The conclusion for chapter six follows.

6.6 Conclusion

The aim of this chapter was to explore key findings from this research and discuss these findings in conjunction with relevant literature on the topic.

Theme one, oracy and graphicacy terminology, addressed the definitions of both oracy and graphicacy. It has emerged that the PS teachers do not have a clear understanding of both of these terms as they narrowly defined each term which limited their understanding. Their limited understanding has a knock-on effect as it limits their ability to teach both of these skills. This finding supports the need for the clarity of the meaning of these terms and the uniformity across all years on the programme. Gaining a thorough understanding of both of these terms at the beginning of Y1 would allow for further understanding and development in this area throughout the four-year degree programme.

Theme two looked at TLA, which explored the need for explicitness in defining and understanding the concepts of oracy and graphicacy, and explicitness in developing strategies and adopting the theory into their own subjects. Incorporating an explicit teaching approach to oracy and graphicacy would increase the awareness of these concepts for PS teachers and would allow them to become more competent in oracy and graphicacy in the technical subjects. Which would require staff to be well informed of oracy and graphicacy, but also to collectively discuss how best to incorporate strategies into their various subject disciplines.

Theme three discussed the benefits of oracy and graphicacy development and capability. The findings suggested that there were a number of advantages of developing these skills not only as a professional teacher but the relevance of these skills in everyday life were also acknowledged. Perhaps if PS teachers were more aware of how important these skills were throughout life, they may be more inclined to urge their pupils to develop these skills more thoroughly.

Theme four addressed the barriers in developing oracy and graphicacy which included the lack of training in these areas, consistency in terms of implementation across the ITE programme and not enough timetabled hours to contribute to developing PS teacher’s confidence in freehand sketching. These impacting factors will play a role in the oracy and graphicacy workshop, as efforts will be made to counteract each barrier.

The four themes discussed above highlighted some of the difficulties associated with developing oracy and graphicacy within the ITE programme. The creation of a thorough oracy and graphicacy workshop would help to address most of these issues. As a result of these findings, a workshop has been devised and developed which addresses, but is not limited to, the challenges raised by the topics of this study. The workshop design, pedagogy, and content will be discussed in the next chapter.

Chapter Seven. Output: Proposed Oracy & Graphicacy Workshops

7.1 Introduction

The overall aim of this research study was to investigate oracy and graphicacy knowledge and skills development in a selected post-primary initial teacher education programme in the field of technical education, with a view to enhancing both skills. The final objective of this research, objective six, is to develop a response or research output in relation to the study's findings pertaining to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education. The response is in the form of a three-part workshop series, building upon, and expanding, O' Regan's prior literacy and numeracy workshop series (O'Regan, 2021). The original contribution of this study is to incorporate additional oracy and graphicacy elements into the O'Regan model, to create a more comprehensive literacy, numeracy, oracy and graphicacy workshop series for PS teachers in the field of technical education. The workshop aims to create awareness, amongst PS teachers, of oracy and graphicacy – as sub-sets of literacy and numeracy - and aids them in developing and embedding these skills into their professional teaching practice in the field of technical education. Section 7.2 discusses the rationale for the training workshops, followed by section 7.3 which explores the workshop design. Section 7.4 includes the pedagogy in which the workshop was based upon, and finally section 7.5 showcases the proposed oracy and graphicacy workshops. This is followed by the chapter conclusion - section 7.6.

7.2 Rationale

In light of the COVID-19 pandemic, this study was conducted entirely online. Many restrictions were imposed globally due to the pandemic, including social distancing and event capacity, which were finally lifted in Ireland in January 2022 (O'Shea, 2022).

Responses from each cohort in the data highlighted a need to improve oracy and graphicacy development within the ITE programme. The primary data analysis revealed that some PS teachers and ITE staff had proposed holding a workshop to enhance the programme's oracy and graphicacy skills. Their suggestions for improving oracy and graphicacy on the programme were:

> "More workshops or information sessions on how to promote or incorporate them (oracy and graphicacy) in lessons in a fun and relevant way" (Y3 PS Teacher)

> "I think if we possibly had some more formal explicit training on how to incorporate graphicacy" (Y3 PS Teacher)

> "I think the workshop could be … the start of the conversation as to … what do we want to do to? … to improve the oracy skills" (M2)

Given the circumstances and suggestions from PS teachers and staff it was decided that an online workshop series would be the most appropriate delivery method given the ambiguous times. Furthermore, as this workshop design follows O'Regan's (2021) literacy and numeracy workshop model - which was designed to be delivered online - this study has taken the same approach. A workshop has been described as being a strategy used commonly in higher education for the purpose of promoting professional development in knowledge and skills (Wilkerson, 1998; Steinert, 2000; Y. Steinert K. M., 2006; Y. Steinert M. B., 2008; Elisa A. Zenni, 2021).

Online workshops were described as "truly inclusive" by Hamilton (2020), as she explained how online technologies have benefitted as it allows us to connect with others from different time zones and locations (Hamilton, 2020), making workshops flexible, easily accessible, and cost reducing (Ali, 2018). It was important for the researcher that the engagement and authenticity of a face-to-face workshop was not lost due to the workshop being delivered online. It was decided that the best way to deliver these workshops would be online, using platforms such as MS Teams or Zoom, because PS teachers are very familiar and comfortable with online platforms and have been trained to deliver online. Online delivery of the workshop series would mean a wider geographical reach, which would lead to capturing more participants.

The goal of this series of workshops was to advance participants' understanding of what oracy and graphicacy are from a fundamental level to the growth of their sense of self before moving on to the more practical aspects of integrating these abilities into the teaching of technical subjects. Table 7.1, which depicts the connections between the topics that developed from this research study and how the findings from each subject are handled in the series of training workshops, includes these three developing stages.

Table 7.1

Correlation Between the Research Discussion and the Workshops (modified from O' Regan, 2021)

Discussion Topic	Workshop Element	Stage of Development
Oracy and Graphicacy Terminology	*Workshop 1* **Activity 1** – Defining Oracy **Activity 2** – Defining Graphicacy	**Foundational** knowledge developed
Oracy and Graphicacy In ITE	*Workshop 2* **Activity 3 (a)** – Transversal/ Disciplinary Oracy and Graphicacy Skills **Activity 3 (b)** – Personal/ Pedagogical Oracy and Graphicacy Skills	**Foundational** knowledge and skills developed
PS Teachers' Perceptions of Their Personal Oracy and Graphicacy Abilities	*Workshop 2* **Activity 4** – Confidence and Competence	**Personal** knowledge developed
The Relationship Between Theory and Practice Within the Technical Subjects	*Workshop 3* **Activity 5** – Oracy in Practice **Activity 6** – Graphicacy in Practice	**Practical** knowledge developed

The workshop commences with the definition of, and clarification of, the key terms ‘oracy’ and ‘graphicacy’. The rationale behind this decision was evidence, during the course of this study, of a recurring lack of clarity and uniformity in understanding of key terms - amongst both PS teachers and lecturing staff - with an overall generally narrow definition (see Section 6.2). It was important that the participants gained an accurate understanding of oracy and graphicacy terminology in workshop one, as a foundation upon which subsequent workshops were based. Participants’ ability to improve personal skills and their pedagogical knowledge of developing oracy and graphicacy skills in the classroom is influenced by the definitions of oracy and graphicacy, as developed in workshop one activities one and two, as highlighted previously, (see Section 5.4). The workshops address this issue by breaking down the terminology and emphasizing their significance in ITE.

As discussed in section 6.4, workshop two addresses participants’ metacognition in terms of oracy and graphicacy development and encourages them to self-reflect on their skill level and abilities. Bangkom and Sukavatee (2021) discuss how metacognition is vital for oracy growth, noting that the stronger oracy metacognition amongst persons, the more proficient they are in oracy. Activity four was included in the workshop series as it gives participants the opportunity to self-reflect on their abilities in light of the knowledge they have gained from the previous activities. This activity aims to encourage the participants to recognize where they have made progress in their personal and professional development as well as guiding them to pinpoint areas where they can improve.

An area which was discussed in section 6.3 was the idea of, and need for, explicitly teaching oracy and graphicacy skills. Workshop three addresses this issue as it focuses on the practical elements of implementing oracy and graphicacy into the technical subjects. Section 6.5 discusses the disconnect between PS teachers’ practice and what the school placement tutors have remarked upon. A sample oracy and graphicacy model is provided to participants to aid them with addressing these challenges as they remodel these examples in groups for the technical subjects in activities five and six. These activities aim to solidify the relationship between oracy and graphicacy theory and practice amongst participants.

The development of oracy and graphicacy training workshops was deemed a natural outcome of this research study by the researcher and some participants in the case study. In addition to the workshops being an output of this research study the workshops will help develop the ITE programme participants' knowledge of oracy and graphicacy in terms of definition, in the context of ITE, and in the technical subjects as they learn to implement and develop these skills in their own classrooms and practice. Due to the lack of oracy and graphicacy training for PS teachers and lecturing staff on the ITE programme, this workshop was methodologically designed to help address this need through the incorporation of active teaching strategies.

7.3 Workshop Design

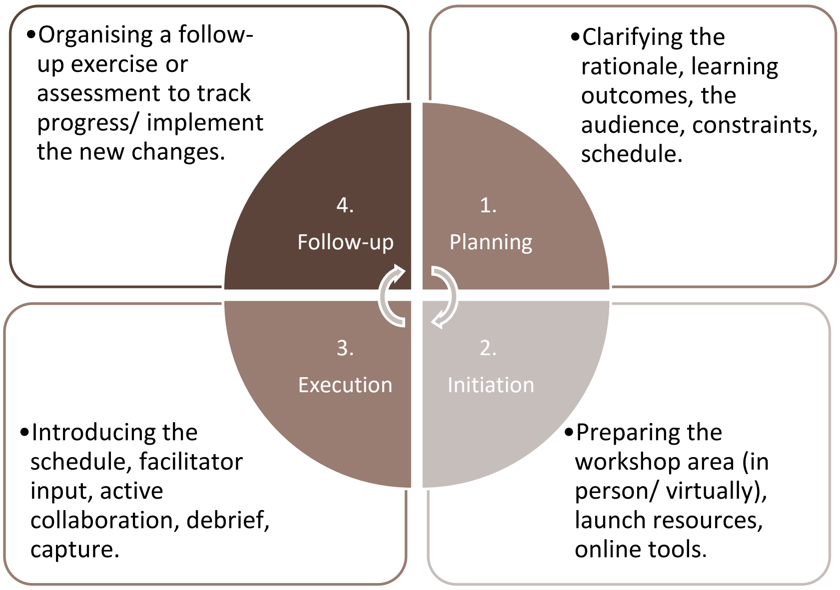
This workshop was designed to tackle some of the issues raised in Chapter Six, although the design was not limited to those issues alone. The workshops were designed to start at the basic level of understanding from participants regarding oracy and graphicacy and to build on that knowledge from workshop to workshop. The workshops were designed to be as engaging as possible in the online space by including active learning strategies and utilising features on MS Teams such as hands-up, breakout rooms, chat, reactions, and polls, along with the inclusion of MS Forms, Miro, and a random name generator. These features have been used for embedded activities and presentations throughout the workshop. Including these activities throughout the workshop is important to activate and engage the participants, according to Monthan (2018) this stage is crucial as this is where most of the learning and work takes place.

Due to the workshop being delivered online, the researcher had to consider and choose between a number of online platforms to utilise for the delivery. The important questions that influenced the decision were which platform was most accessible to the workshop audience and which applications they and the researcher felt most secure using. During the COVID-19 pandemic learning shifted online and the platform in which the case study university utilised during this time and continue to use is the MS Teams platform. MS Teams was also used for conducting the primary data gathering for this research study, so it was viable to use the same platform for the delivery of these workshops. MS Teams includes a number of key features, which include separate spaces and channels, web conferencing, chat, calls, documents, discussions, broadcasting, planner, and it also easily integrated with other applications not only within Office 365 but with other platforms too (Perry, 2019).

There are many factors to consider when delivering a successful workshop online. According to Majure (2021) there is a four-phase cycle to developing a workshop which includes the following steps: planning, initiation, execution, and follow-up (Majure, 2021) (see Figure 7.1).

Figure 7.1

Four-phase Lifecycle of a Workshop (adapted from Majure, 2021)



This workshop series is designed with Majure's (2021) four phases of a workshop in mind, with a particular focus on phase one. Phase one of the workshop cycle, planning, for this research included creating a justification for the workshop series, defining the precise outcomes of the research, identifying the target audience for the workshops, considering potential challenges in designing and executing the workshop, as well as determining how the workshop would be presented in terms of start and finish times and scheduling breaks in between. Vasyukova (2022) suggests that for every 60 to 90 minutes of a workshop there should be an allowance of a 15-minute break for participants as well as for the workshop facilitator. This is an important aspect to plan for when designing a workshop as it gives all associates time to refresh, eat, and drink to keep energy levels high (Vasyukova, 2022). It was decided that this workshop series would run no longer than 120 minutes per workshop with an inclusion of a 15-minute break in the middle of each. During this time participants will be encouraged to move away from their screens and take some time to get some fresh air, eat, and drink. According to Siniscaroo (2020), when facilitating remote workshops, they must fall between 60 to 120 minutes to achieve optimum engagement, anything longer would result in a loss of productivity (Siniscaroo, 2020; Hamilton, 2020).

The possibility of participant disengagement in an online workshop presented a potential challenge, and the two-hour workshop schedule was one strategy used in the design to help address this possibility. The incorporation of a variety of different activities to help create a more interactive workshop space was another element that was taken into consideration when designing the workshop to help reduce disengagement (Vasyukova, 2022). Interactive workshops increase productivity and encourage participants to stay focused (Boogaard, 2021). Boogaard (2021) also explained how interactive workshops encourage active participation from all attendees and help to develop psychological safety by allowing participants to get to know one another on a deeper level, which makes the environment conducive to sharing.

Knowing the number of participants who wish to attend your workshop is another important factor in the workshop planning process. Siniscaroo (2020) highlighted the importance of having knowledge of how many participants were going to attend your workshop. She explains how in remote workshops its more difficult to adapt activities to the number of participants when the number is unknown during the planning phase. To ensure the workshop activities, and break-out rooms and groups could be planned accordingly to the participant size, participants will be required to register online for the workshop event. Participants will be sent a workshop flyer via their ATU email address which includes a link for free registration for the workshop series (see Appendix 17). Thus, allowing the facilitator to gain useful information which will contribute to the workshop design.

This workshop is designed for a specific cohort, which include the PS teachers and ITE lecturers involved in the *B. Sc in Education* programme in ATU Connemara. The main aim of this series of workshops is to create an awareness amongst participants as to what oracy and graphicacy mean personally, in ITE, and in their professional teacher practice by collectively developing a model/ framework which will act as an aid for the implementation of these skills within their classrooms. The learning outcomes for this research directly relate to issues raised in the discussion chapter (Chapter Six). At the end of this workshop series, participants will be able to:

1. Clarify the definitions of the term's oracy and graphicacy, relevant to modern-day society.
2. Distinguish between oracy and graphicacy transversal and disciplinary oracy and graphicacy skills development, in the context of ITE and in the classroom.
3. Differentiate between the development of personal oracy and graphicacy skills and the development of pedagogical knowledge of oracy and graphicacy teaching, on the ITE programme.

4. Self-assess personal oracy and graphicacy skill abilities by means of an ITE oracy and graphicacy test, and on their previous definitions of the skills.

5. Contribute to the creation of a framework or model that would help ITE staff and pre-service teachers develop oracy and graphicacy, specifically in the technical subjects.

The workshop is designed to achieve learning outcome one in workshop one, learning outcomes two, three, and four in workshop two, and learning outcomes four and five in workshop three.

Phase two involved initiating the workshop which included preparing the workshop area. As clarified in section 7.2, the workshop area in this case refers to the MS Teams online platform. As was previously noted, it is crucial for the workshop to be engaging; as a result, the online tools and resources such as the facilitator's guide questions, the Miro application, and MS Teams features like breakout rooms were created beforehand.

Phase three, the execution of the workshop, which includes introducing the schedule, planning the facilitator input and active collaboration, and debrief. Section 7.5 outlines the proposed workshop series which include each of the elements listed. Due to time constraints the proposed workshop series was not executed although schedules including facilitator input and active collaboration were planned for and outlined.

Lastly, phase four, the follow-up, involves organising an exercise or assessment to track progress or implement the new changes. Since this workshop series is only a proposal, the follow-up exercise or assessment will be tailored to the feedback and needs of the workshop participants. After the workshop series is executed, a follow-up assessment will be designed as a result of the workshop series.

7.4 Workshop Pedagogy

Two educational theories have been chosen to underpin the workshop delivery are: 1) the social -constructivist and collaborative learning approach, and the 2) experiential and discovery learning approach. These approaches were chosen as they provide opportunities for participants to collaboratively engage with higher order thinking and a co-exchange of knowledge, and they contribute to the development of a more engaging and active learning environment. Two theorists mostly associated with social-constructivist theory are Lev Vygotsky (1896-1934) and Jerome Bruner (1915-2016). Vygotsky's social constructivist approach stressed the importance of social interactions and the role of community in developing meaning (McLeod, 2022). Bruner's constructivist approach highlighted the role of the teacher as that of a facilitator, and his theory implies that students construct knowledge for themselves by organising and coding information through co-discovery (McLeod, 2019). Both Vygotsky and Bruner were of the same understanding in terms of the role of an adult in assisting the development of a child as they both believed that adults play an important role in children's learning (McLeod, 2019).

As an illustration of a social constructivist approach, Collaborative Learning (CL) is a teaching and learning approach which promotes students coming together to work in small groups for the purpose of optimising both their individual learning as well as each other's (Johnson & Johnson, 1999). CL requires the participants to take responsibility for their own learning as they take on individual roles within the group, aside from the topic being studied participants develop other skills such as self-management and leadership skills (Valamis, 2022). Although there are many advantages and benefits of adopting a CL approach, there are some disadvantages. According to Drew (2022), CL environments may be difficult for introverted students as they may feel vulnerable in speaking up in groups. For that reason, this workshop was designed to include quiet time for participants to research and write up their ideas individually before coming together. London (2019) suggests how embedding quiet time in workshops is important for maintaining forward momentum. This workshop is designed to utilise a number of different modes of communication, such as oral, written, and graphic, through the use of features on MS Teams like reactions, hands-up, chat, polls, and the Miro application.

Like CL, experiential and discovery learning is a teaching and learning approach that involves students seeking ideas and knowledge by means of exploration and projects (Eisenberg, 2001). Discovery learning has a great advantage in motivating students to learn as it gives students an opportunity to explore their interests which creates a more engaging learning atmosphere (UKEssays, 2018). According to Mihail (2021), discovery workshops are very beneficial for gaining a better understanding and for focusing on collaboration between teams.

7.5 Proposed Workshops

This section outlines the three oracy and graphicacy workshops. Table 7.2 displays the schedule of times and topics for the three workshops.

Table 7.2

Workshop Schedule (Author's Original)

Workshop 1		Workshop 2		Workshop 3	
12:00	Introduction	12:00	Introduction	12:00	Introduction
12:15	Defining Oracy	12:10 12:35	Transversal/ Disciplinary Oracy and Graphicacy Personal/ Pedagogical Oracy and Graphicacy	12:10	Oracy in Practice
13:00	Tea/ Coffee Break	13:00	Tea/ Coffee Break	13:00	Tea/ Coffee Break
13:15 13:45	Defining Graphicacy Wrap up	13:15 13:45	Confidence and Competence Wrap up	13:15 13:45	Graphicacy in Practice Wrap up
14:00	Workshop concludes	14:00	Workshop concludes	14:00	Workshop concludes

Each workshop is two hours long, which is the best practice recommended time for online workshops (Siniscaroo, 2020; Hamilton, 2020). The illustrative example above commences at 12:00 and ends at 14:00 and includes a 15-minute tea or coffee break in the middle, to ensure a screen break, although schedule start time can be flexible. It is planned that the workshop would run over a three-week period. Delivery details on each workshop can be found in sections 7.5.1, 7.5.2, and 7.5.3 below, where each workshop is broken down under a number of headings which include: workshop information, previous knowledge, workshop rationale, learning outcomes and corresponding learning intention and assessment, workshop sequence, and lastly, workshop resources.

7.5.1 Workshop 1

1. Workshop Information

Subject: Define Oracy and Graphicacy	Duration of Workshop: Two hours (including a 15- minute break)
Participants: Pre-service teachers & ITE programme staff	Workshop Number: one of three

2. Previous Knowledge

ITE lecturing staff have received no formal training in the areas of oracy or graphicacy, in general or in the field of technical education. Pre-service teachers possess varying levels of oracy and graphicacy understanding. According to the research data acquired for the purpose of this study, each participant in the case study has at least a basic understanding of the concepts.

3. Workshop Rationale

This workshop seeks to teach participants the fundamentals of oracy and graphicacy terminology while also helping them comprehend the definitions and origins of these terms. A greater understanding of what both oracy and graphicacy encompass and contribute will allow participants to realize the importance and relevance of these skills both personally and professionally. The data from the research study highlighted that many PS teachers contained a

narrow definition of oracy and graphicacy hence narrowing their ability to avail of opportunities to develop both of these skills personally and professionally. A heightened awareness of oracy and graphicacy amongst PS teachers and ITE programme staff should benefit their development in these areas.

4. Learning Outcomes and Corresponding Learning Intention and Assessment

Learning Outcome 1/ 5: To clarify the definitions of the term's oracy and graphicacy, relevant to modern-day society.		
Learning Intention and Success Criteria:	Teaching Approaches:	Assessment:
After completion of workshop 1, participants will be able to clearly define oracy and graphicacy terminology, as well as being able to demonstrate an understanding of how and why a teacher develops these skills in the modern-day classroom.	Facilitator approach Independent research approach Group work/ Team collaboration Presentation Demonstration	Group collaboration and presentation of defined terms (oracy and graphicacy).

5. Workshop Sequence

Timeline	Activity	Resource
12:00	Introduction	
	Facilitator welcomes workshop participants to the oracy and graphicacy workshop series using the Workshop Series Summary PowerPoint. The learning outcomes and expectations are outlined. The sequence of the workshop is presented to the participants which includes the key activities and learning. Rules and routines when speaking through the online platform are set (muting when not speaking, cameras on, hands up, etc). Remind participants that workshop engagement and cooperation are necessary for the workshop to be successful.	
12:15	Defining Oracy (Learning Outcome 1)	
12:20	(Participant self-reflection, oracy – before workshop)	KWL Chart O

	Facilitator asks participants to use the KWL Chart link (see Appendix 20) to input what they currently know about oracy and what they wonder about oracy. Facilitator introduces the concept of oracy and shares the origin of the term. The importance of oracy within the classroom is outlined, and how oracy may inform your professional practice is discussed. Q: What is oracy? And how does it affect you? Independently research the term oracy and gather 3 definitions which aid you in understanding the term better. (5 minutes)	MS PowerPoint Independent research – Oracy
12:30	Facilitator guides the workshop cohort to share their keywords from the definitions they have independently gathered, reminding participants to use the hands-up feature and unmute. Q: What keywords have you gathered to define oracy? Keywords collated in a list Facilitator asks participants to break down the keywords into 3 categories: what, how, and why.	MS Teams hands-up function Chat/ Notes feature to collate responses
12:40	(10 minute activity) Facilitator creates a number of breakout rooms which include approximately 10 participants, with a mix of PS teachers, and lecturing staff. Facilitator gives breakout group leaders 4 questions to discuss within the breakout rooms. 1. What is the first word that comes to mind when you think or hear the word oracy? 2. What verbs describe the actions that you are taking? 3. Why are you taking those actions? 4. How are you taking those actions? Through what mediums? Using these questions and whole group keywords collaboratively create a group definition of oracy. Once final group definition is created type it out and share it in the breakout rooms group chat.	Break-out rooms created Activity instructions Activity guide questions Group Leaders selected The what, the how, and the why when defining oracy.
12:50	All participants re-join main meeting channel. Group leaders are invited to share their newly created definitions into the chat.	MS Teams chat function

	Participants are asked to take note of similarities and differences within the group's definitions. (2/3 of each) Using the definitions, combine all to make the most complete definition of graphicacy. Remind participants of 15-minute break. Step away from your screen, cup of tea/coffee. Resume workshop at 13.15, mute microphones and turn off camera.	
13:00	Tea/ Coffee break	
13:15	Defining Graphicacy (Learning Outcome 1)	
	(Participant self-reflection, graphicacy – before workshop) Facilitator asks participants to click the KWL Chart Link (see Appendix 21) to input what they currently know about graphicacy and what they wonder about graphicacy on a sticky note. Facilitator introduces the concept of graphicacy and shares the origin of the term. The importance of graphicacy within the classroom is outlined, and how graphicacy may inform your professional practice is discussed. Q: What is graphicacy? And how does it affect you? Independently research the term graphicacy and gather 3 definitions which aid you in understanding the term better. (5 minutes)	KWL Chart G MS PowerPoint Independent research (5 minutes)
13:20	(10 minute activity) Using the same groups and breakout rooms, the facilitator asks the groups to select a new group leader. Facilitator gives breakout group leaders 4 questions to discuss within the breakout rooms. (the same questions used in the oracy activity) 1. What is the first word that comes to mind when you think or hear the word graphicacy? 2. What verbs describe the actions that you are taking?	Break out rooms New group leaders Guide questions

	3. Why are you taking those actions? 4. How are you taking those actions? Through what mediums? Using these questions and whole group keywords collaboratively create a group definition of graphicacy. Once final group definition is created type it out and share it in the breakout rooms group chat.	Group discussion and collaboration The what, the how, and the why when defining graphicacy.
	All participants re-join main meeting channel. Group leaders are invited to share their newly created definitions into the chat. Participants are asked to take note of similarities and differences within the group's definitions. (2/3 of each) Using the definitions, combine all to make the most complete definition of graphicacy.	
13:45	Wrap up	
	(Participant self-reflection, oracy and graphicacy – after workshop day 1) Participants are asked to open up both KWL Charts using the links which they used at the beginning of the workshop. Once complete, the facilitator asks participants to share their responses orally (sample of participants 3-5), participants are invited to volunteer to speak using the hands-up feature.	KWL Chart O KWL Chart G MS Teams hands up feature
13:55	The facilitator reminds the participants of the learning outcome of workshop 1 and summarizes the learning. The newly created definitions of oracy and graphicacy are shared. The learning outcomes for workshop 2 are outlined.	

	Facilitator thanks the participants for their engagement and co-operation.	
14:00	Workshop close	

6. Workshop Resources

MS PowerPoint presentation workshop summary (See Appendix 18) Workshop 1 PowerPoint (see Appendix 19) KWL Oracy Chart (see Appendix 20) KWL Graphicacy Chart (see Appendix 21) Breakout rooms

7.5.2 Workshop 2

1. Workshop Information

Subject: Oracy and Graphicacy in ITE	Duration of Workshop: Two hours (including 15 minute break)
Participants: Pre-service teachers & ITE programme staff	Workshop Number: two of three

2. Previous Knowledge

Participants have not received any formal oracy and graphicacy training in ITE although participants have a varied understanding of what oracy and graphicacy means for ITE. Year 3 and year 4 participants would have had greater opportunities for creating spaces for oracy and graphicacy development within their classrooms over year 1 and year 2 participants. Hence, year 3 and 4 participants would contain a greater awareness of oracy and graphicacy development in the classroom. Many participants including PS teachers and ITE programme staff wouldn't have had opportunity to consider or reflect on their personal oracy and graphicacy skills development as they haven't undergone formal assessment or been given formal feedback in these areas.

3. Workshop Rationale

Breaking oracy and graphicacy down into more manageable categories will allow participants to understand the complexity of these skills in ITE with more ease. These categories include transversal, disciplinary, personal, and pedagogical. Allowing participants to take time and reflect on their own skill abilities will have a positive effect on their development and awareness of these skills. The research study revealed that participants were able to list limited examples of strategies to improve oracy and graphicacy within the classroom, possibly due to their narrow definition of the terms to begin with. This workshop hopes to develop an awareness within participants to recognize and create scenarios to develop these skills.

4. Learning Outcomes and Corresponding Learning Intentions and Assessment

Learning Outcome 2/ 5: To distinguish between oracy and graphicacy transversal and disciplinary oracy and graphicacy skills development, in the context of ITE and in the classroom.		
Learning Intention and Success Criteria:	Teaching Approaches:	Assessment:
Participants will be able to decipher between transversal and disciplinary oracy and graphicacy skills from a list of scenarios given.	Independent research approach Teacher as a facilitator approach Collaborative learning approach MS Quiz	Visual observation Discussion MS Quiz
Learning Outcome 3/ 5: Differentiate between the development of personal oracy and graphicacy skills and the development of pedagogical knowledge of oracy and graphicacy teaching, on the ITE programme.		
Learning Intention and Success Criteria:	Teaching Approaches:	Assessment:
Participants will be enabled to develop a list of teaching strategies and methodologies to develop personal oracy and graphicacy skills.	Teacher as a facilitator approach MS Quiz Collaborative learning approach	Visual observation Questioning Discussion
Learning Outcome 4/ 5: To self-assess personal oracy and graphicacy skill abilities by means of an ITE oracy and graphicacy test, and on their previous definitions of the skills.		
Learning Intention and Success Criteria:	Teaching Approaches:	Assessment:

Participants will be able to measure their own oracy and graphicacy skill abilities by participating in a class oracy and graphicacy test.	Teacher as a facilitator approach Self-assessment approach Collaborative learning	Oracy and graphicacy test Self-assessment

5. Workshop Sequence

Timeline	Activity	Resource
12:00	Introduction	
	Facilitator welcomes participants to workshop 2. Facilitator summarizes the key learning from workshop 1, reminding the participants that they developed new definitions of oracy and graphicacy. The facilitator tests participants by asking them to remember the definitions they created in workshop 1 and asks them answer using MS Quiz (see Appendix 22). MS Quiz will give participants an immediate response as to whether they were correct/incorrect. Facilitator will ask the participants to gauge their confidence with defining oracy and graphicacy by asking them to use the thumbs up and thumbs down feature on MS Teams. (thumbs up – confident, thumbs down – not so confident) The three learning outcomes for this research are outlined.	
12:10	Oracy and Graphicacy in ITE (Learning Outcome 2)	
	Facilitator explains how there 4 elements of oracy and graphicacy development in ITE – transversal, disciplinary, personal, and pedagogical. Differences between each element is outlined and explained as well as the importance of each.	MS PowerPoint presentation (see Appendix 23)
	(10 minute activity) Using MS Forms, participants are asked to identify the transversal and disciplinary skills within a list of learning intentions and assignments. The results from the questionnaire will be explored further. Differences in opinions will make for meaningful discussion. The importance of these skills will be discussed in more detail.	MS Forms Questions sheet
	The facilitator explains the rationale behind the previous task as they explain the value of being able to actively consider and	

	recognize the transversal and disciplinary aspects of developing oracy and graphicacy skills in the classroom.	
12:35	Personal and pedagogical skills (Learning Outcome 3)	
	The facilitator asks PS teachers and ITE programme staff to reflect on the teaching strategies used within the ITE programme to develop PS teachers personal oracy and graphicacy abilities, aside from their abilities to teach oracy and graphicacy skills to their students.	MS PowerPoint
	The facilitator asks participants to take time to reflect and consider the two elements of teaching and developing oracy and graphicacy skills development. 1. Developing personal oracy and graphicacy skills 2. Teaching students to develop their oracy and graphicacy skills. Facilitator will give participants 5 minutes to think of an example of where PS teachers can develop their personal oracy and/or graphicacy skills within the ITE programme. Facilitator will ask participants to use the hands-up feature to share their responses whilst the facilitator gathers the responses on a mindmap using Miro application. Remind participants of 15-minute break. Step away from your screen, cup of tea/coffee. Resume workshop at 13.15, mute microphones and turn off camera.	MS Teams hands-up Miro mindmap application
13:00	Tea/ coffee break	
13:15	Competence and confidence in oracy and graphicacy skills (Learning Outcome 4)	
	General findings from the research study are shared with participants regarding their confidence levels in both oracy and graphicacy in general and in individual skills. Facilitator shares the misalignment between PS teachers confidence and competence. The facilitator explains to the workshop cohort the duty of a teacher in developing students oracy and graphicacy skills no matter what subject or discipline you're involved with. Starting with our personal abilities, next we will test our own competence by completing an online test.	MS PowerPoint presentation
13:25	The facilitator poses a question to the participants.	MS Forms test

	Q: How can we assess our own oracy and graphicacy skills considering school placement tests our capacity to teach oracy and graphicacy? The facilitator introduces an activity which will help gauge participants competence in these skills. The participants are asked to answer an anonymous online test of personal oracy and graphicacy abilities. Before answers are shown, ask yourself if you feel confident that you answered all questions correctly (by show of hands) Show questions with answers. Calculate percentage that you got correct. Based on the definitions which you all created in the previous workshop and at the beginning of this workshop, do you feel that you are achieving everything that the definitions are suggesting? Using a Likert scale… hands-up if you feel 1. Completely satisfied that you are achieving all that the definitions suggest 2. Satisfied 3. Not satisfied. Facilitator will take note of the number of hands up and ask participants to work out percentages of the group who responded in each category. Responses in the chat.	MS Teams Hands up function Questions and answers sheet Chat function
13:50	Wrap up	
	The facilitator summarizes the session by recalling the key learnings (transversal, disciplinary, personal, and pedagogical) and addressing learning outcomes 2, 3, and 4. The facilitator gives participants 2 minutes to type into the chat their main learning from workshop 2. Once all participants respond ask 2/3 participants to volunteer to discuss why they thought their specific learning was important. Briefly outline what has been achieved in workshop 1 and 2, and introduce the learning outcomes for workshop 3. Facilitator thanks the participants for their engagement and co-operation throughout workshop 2.	MS PowerPoint MS Teams Chat function
14:00	Workshop closes	

6. Workshop Resources

MS PowerPoint workshop 2 (see Appendix 23)
Miro application
MS Forms questionnaire

7.5.3 Workshop 3

1. Workshop Information

Subject: Oracy and graphicacy theory and practice	Duration of Workshop: two hours (including 15 minute break)
Participants: Pre-service teachers and ITE programme staff	Workshop Number: three of three

2. Previous Knowledge

Participants who participated in the previous two workshops will now grasp what oracy and graphicacy mean in general, as well as in terms of initial teacher education. Participants will be more aware of their own personal oracy and graphicacy skills, as well as the growth of these skills in the classroom. The final workshop will look at how to put this information into action. Participating PS teachers will have had training on how to build these skills in the classroom, but they may not have had the opportunity to create a framework or model that addresses all of the varied challenges of doing so in the technical subjects.

3. Workshop Rationale

This final workshop brings together the knowledge gained in workshops one and two by combining the participants new knowledge on oracy and graphicacy and contributing that towards building a new comprehensive framework or model for the technical subjects. The creation of a new framework for oracy and graphicacy specific to the technical subjects will provide ITE programme staff and PS teachers a guide with how to develop these skills using different techniques.

4. Learning Outcomes and Corresponding Learning Intention and Assessment

Learning Outcome 5/5: To contribute to the creation of a framework or model that would help ITE staff and pre-service teachers develop oracy and graphicacy, specifically in the technical subjects.		
Learning Intention and Success Criteria:	Teaching Approaches:	Assessment:
Participants will be able to create a framework or model for the development of oracy and graphicacy skills in the technical subjects.	Teacher as a facilitator approach Problem based learning approach Collaborative learning approach Group presentations	Visual observation Group presentations

5. Workshop Sequence

Timeline	Activity	Resource
12:00	Introduction	
	Facilitator welcomes participants to the final workshop of 3. Facilitator reminds participants of the achieved learning outcomes so far (1-4). The Facilitator outlines the final learning outcome and explains what to expect from this final workshop. The facilitator assures ITE programme staff and PS teachers that by the end of this workshop they would have the tools to implement oracy and graphicacy development successfully into the technical subjects and have an awareness on how to develop personal oracy and graphicacy skills also.	MS PowerPoint presentation
12:10	Oracy in Practice	
	Facilitator shares research findings regarding oracy frameworks and models. Oracy framework – Voice 21 Facilitator gives an account of who Voice21 are and what their aim is for in terms of oracy development in schools.	MS PowerPoint presentation Voice21 website
12:20	(15 minute activity) Q: Take a look at Voice 21's Oracy Framework. Using the framework as a guide, in groups design an oracy framework for the technical subjects. Develop a diagram or graphical	Guide questions MS Teams breakout rooms

	representation to outline how this framework may be adjusted to suit the technical subjects. Facilitator shares group members and leaders – pre-organized and mixed. Groups must provide a rationale for their framework design. Groups must choose one member of the group to present their design on the main workshop channel. Facilitator explains that they have 15 minutes for this activity.	Pre-organised list of groups Miro application Timer
12:35	All groups return to main workshop channel Using a random wheel group name picker, 3 groups will be randomly selected to present their framework. (2 minutes per group presentation) Facilitator will ask participants to rate the models 1-3 (1=highest, 3=lowest). They will also be asked to share some strengths and weaknesses verbally, of each framework presented. Remind participants of 15-minute break. Step away from your screen, cup of tea/coffee. Resume workshop at 13.15, mute microphones and turn off camera.	Random wheel name picker MS Teams Screenshare MS Teams hands-up Verbal feedback
13:00	Tea/ Coffee break	
13:15	Graphicacy in Practice	
	Welcome participants back after break Facilitator shares research findings regarding graphicacy frameworks and models. Not as many frameworks available for graphicacy Graphicacy framework – visual literacy Facilitator gives an account of the graphicacy/ visual literacy frameworks and what their aims are in terms of graphicacy development in schools.	MS PowerPoint presentation
	(15 minute activity) Q: Take a look at ACRL's Framework. Using the framework as a guide, in groups design a graphicacy framework for the technical subjects. Develop a diagram or graphical representation to outline how this framework may be adjusted to suit the technical subjects. Facilitator shares group members and leaders – pre-organized and mixed. Groups must provide a rationale for their framework design. Groups must choose one member of the group to present their design on the main workshop channel. Facilitator explains that they have 15 minutes for this activity.	Guide questions MS Teams breakout rooms Pre-organised list of groups Miro application Timer

	All groups return to main workshop channel Using a random wheel group name picker, 3 groups will be randomly selected to present their framework. (2 minutes per group presentation) Facilitator will ask participants to rate the models 1-3 (1=highest, 3=lowest). They will also be asked to share some strengths and weaknesses verbally, of each framework presented.	Random wheel name picker MS Teams Screenshare MS Teams hands-up Verbal feedback
13:45	Wrap up	
	Reflection on workshop learning: What was important? Why is it important? How will this impact your teaching?	MS Teams chat function Verbal presentation of ideas.
	Final recap: Remind participants of learning outcomes for 3 workshops and how these were achieved. Present the most useful models for oracy and graphicacy. Congratulate and thank participants for their engagement and effort throughout all three workshops. Invite participants to leave feedback from the 3-day workshop through MS Forms.	MS PowerPoint 7.6 models MS Forms
14:00	Workshop closes	

6. Workshop Resources

MS PowerPoint Workshop 3 (see Appendix 24) Feedback Form (see Appendix 25) List of groups and leaders Wheel of names

7.6 Conclusion

This chapter sought out to address objective six of this research which was to develop a response or research output in relation to the study's findings pertaining to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education. To address this objective. it was decided to contribute to a pre-existing literacy and numeracy workshop by O'Regan (2021) and design a series of three workshops that could seamlessly be added to the O'Regan model, in terms of structure, design and pedagogy.

The workshop series was designed to be delivered in the online space to ensure maximum accessibility. To ensure the experience of face-to-face physical learning was not lost due to the format of the workshop, active online strategies were embedded throughout the workshops to mimic this experience and improve engagement in the online space. The platform chosen to deliver this workshop's features have been utilised to the fullest.

The workshops build from foundational knowledge to personal knowledge and progress onto practical knowledge before completion of the series. Each workshop in this series has been designed specifically to align with the themes and findings from this study. Focusing on areas such as defining the terminology, oracy and graphicacy in ITE, confidence and competence, and oracy and graphicacy in practice. This series of workshops gives participants opportunity to home in on oracy and graphicacy, expand and develop their knowledge in this area, as well as encourages the embedding of oracy and graphicacy skills in the technical classroom.

Chapter Eight: General Conclusion and Recommendations

8.1 Introduction

This study set out to embed best practice oracy and graphicacy skills development in a selected post primary ITE programme in the field of technical education. The case study programme was the *BSc (Honours) in Education (Design, Graphics and Construction)* degree programme, in the Department of Creative Education, ATU, Ireland. This final chapter presents the main conclusions and recommendations arising from this research study. The chapter is structured as follows: firstly, key conclusions from the study are organised according to the research objectives (section 8.2), following this, the contribution to knowledge (section 8.3), strengths and limitations of the study (section 8.4) and recommendations from the study (section 8.5), are presented.

8.2 Research Conclusions

This section takes each objective in turn and provides a conclusion for each.

8.2.1 Objective 1

Objective one set out to clarify oracy and graphicacy terminology, with reference to literature. In order to achieve this objective, this study identified and examined pertinent literature that attempted to define the terms oracy and graphicacy, with a view to establishing working definitions for this study. The findings from the literature revealed that the terms "oracy" and "graphicacy" are not commonly used, frequently misunderstood, or overlooked because literacy and numeracy occupy centre stage. There wasn't a lot of literature on either of these concepts in terms of technical education, and the definitions given by various authors varied a lot because neither concept had a widely accepted or precise meaning. This research concludes that the definition of oracy has become to encompass much more than its original definition (speaking/listening), as more recent definitions incorporate the physical, linguistic, cognitive, and social and emotional aspects of the concept. The literature analysis concludes that there are many other terms used as an alternative to the term graphicacy, some of which include visual communication, visual literacy, cartography, and spatial abilities. This lack of universal definition impacts how oracy and graphicacy are perceived in ITE and technical education. In an attempt to bridge this gap, the author created definitions for each term by combining several definitions from various writers (see Sections 2.3.1 & 2.3.2). Additionally, in order to establish a single, widely accepted definition for each concept on the ITE programme, the workshop series suggested by this study includes components that involve participants working together and developing their own definitions for oracy and graphicacy.

8.2.2 Objective 2

Objective two set out to conduct a literature analysis study of oracy and graphicacy, in the context of ITE, and subject delivery at post primary level with particular emphasis on technical education. The findings indicated that there is minimal literature on these concepts in Irish post-primary and ITE, highlighting the system's shortcomings in this area. While there were a few instances in which elements of both skills were incorporated into general literacy or numeracy concepts through educational documentation from the NCCA, DES, and the TC, there were insufficient supports or guides to encourage and aid educators on how to improve and incorporate these concepts into the classroom. Lastly, as part of the new Junior Cycle Reform, the new subjects WT and G were analysed for oracy and graphicacy content. Aside from the implicit connections between the subject strands and oracy and graphicacy elements, and the incorporation of some oracy and graphicacy elements specifically within the eight key skills, the results showed that although oracy and graphicacy are extremely relevant to the subjects, they are not dealt with explicitly. With respect to objective two, this study comes to the conclusion that more research is needed in this field as there is insufficient information available concerning oracy and graphicacy in post-primary technical education and ITE.

8.2.3 Objective 3

Objective three set out to conduct a documentary analysis study of key technical subject curricula, and, whole school and subject inspection reports pertaining to technical education, published by the DES, since the launch of the literacy and numeracy framework (2011). Oracy and graphicacy were not evaluable criteria for the WSER and SIR, according to the documentary study. The results of the study demonstrated that both concepts were underrepresented in the documents because the great majority of the reports did not explicitly address either concept. When technical curricula were evaluated, the results were similar to those of the WSER and SIR in that correct terminology wasn't regularly used across the publications and that specific oracy components weren't frequently included, albeit graphicacy-related topics were. This research leads to the conclusion that "oracy" is not a term that is frequently used or linked to technical subjects in terms of curricula, WSER, and SIR. With respect to objective three, the study concludes that oracy and graphicacy are underrepresented in the curricula and are not regarded as assessable criteria for WSER and SIR due to the lack of supporting data found in the analysis.

8.2.4 Objective 4

In order to assess the status of both oracy and graphicacy consideration, objective four sought to perform a documentary analysis of the ITE case study programmes MD. According to the results of the documentary analysis, the only MD from years one to four that specifically stated oracy and graphicacy throughout the document were the School Placement modules one, two, and four. Given the educational nature of the School Placement modules, it's possible that these were the only modules to specifically discuss oracy and graphicacy. The development of educational materials for use in the classroom, such as lesson plans and planning grids, calls for the incorporation of multimodal teaching methodologies that take into account tactics for literacy, numeracy, oracy, and graphicacy.

Although several of the modules made multiple implicit references to various parts of both concepts throughout the documentation, there were few instances when they were specifically acknowledged. Many of the more graphical based modules referred to graphicacy more than oracy, although not explicitly. Due to the nature of these modules, it was expected that graphicacy elements were identifiable from the MD. In conclusion, even though the majority of MD impliedly understood both concepts, oracy and graphicacy were not well-represented in an explicit manner.

8.2.5 Objective 5

Objective five set out to conduct a primary case study within one technical teacher education programme, in order to critically assess current levels of oracy and graphicacy knowledge and skills. The case study considered the oracy and graphicacy knowledge and skills of the PS teachers in addition to seeking the perspectives from lecturer and management positions on the ITE programme.

The researcher was able to acquire insight into the knowledge and understanding of oracy and graphicacy at each level of the ITE programme by using a questionnaire with PS teachers, a focus group with lectures, and lastly interviews with management. These methodological decisions, which were made throughout the investigation, allowed for meaningful interaction with the participants and provided the research triangulation, which gave the study credibility. Lecturing staff and members of management had different understandings of oracy and graphicacy. Since the participating lecturers and management come from various academic fields, it makes sense that oracy and graphicacy would signify different things to them given the diversity of their respective fields. The case study found that PS teachers in years three and four were able to give broader definitions of the term's oracy and graphicacy and shared more development strategies for each, suggesting that they had a better knowledge of both. Although in general, the PS teachers hold some level of uncertainty in these areas as important elements of each were not mentioned in their responses. Several of which involve the listening skill necessary for effective communication. The results from PS teachers and staff revealed a gap between oracy and listening skills. Similar to the first disconnect, PS teachers neglected the communication component of graphicacy, referring to comprehension and interpretation skills only.

It became apparent that the study's participants needed appropriate training in oracy and graphicacy, starting with a definition of these words. It is imperative that participants grasp what oracy and graphicacy are in order for them to perceive these ideas with accuracy and have a good impact on their learning and development. In order for all participants in the ITE programme to hold the same level of understanding, objective five's conclusion is that the current levels of oracy and graphicacy knowledge and skills on the case study programme must be further enhanced.

8.2.6 Objective 6

Objective six sought out to develop a response or research output in relation to the study's findings pertaining to oracy and graphicacy knowledge and skills enhancement in ITE in the field of technical education. An oracy and graphicacy workshop series was designed in response to the needs evident from the primary data analysis. The workshop was designed to address these needs but was not limited by them. The overall aim of the workshop was to further develop and enhance oracy and graphicacy skills and knowledge for all PS teachers, lecturing staff, and management on the ITE programme. The workshops will assist the workshop participants in collaboratively developing an approach to further enhance oracy and graphicacy development in the field of technical education.

The oracy and graphicacy workshop series adopts a collaborative and problem-based learning approach which creates opportunities for group work involving a mix of participants with different experiences and knowledge. The workshops were designed to explore and collaboratively define both oracy and graphicacy terminology, to investigate oracy and graphicacy in ITE, and to advance participants ability to embed these skills into their own teaching practice. The workshops provide opportunities for participants to reflect on their own abilities and knowledge to further enhance them.

8.3 Contribution to Knowledge

With respect to contribution to knowledge, this study builds upon prior studies in the field but extends knowledge to the explicit area of technical education in the context of ITE. This study offers an original documentary analysis of key technical documentation (Section 2.6.1), including an analysis of MD (Section 2.6.2) pertaining to ATU's ITE programme in terms of their explicit and implicit mention of oracy and graphicacy.

It became clear in chapter two that ITE programmes in Irish contexts, notably in the area of technical education, do not typically include oracy and graphicacy studies. As this study offers insights from the viewpoints of individuals involved in developing these skills in technical subjects (Chapter Four and Five), an area that has received little focus - this thesis adds something new to the corpus of knowledge on this issue.

The literature analysis (Chapter Two) identified certain gaps in the literature, including the lack of frameworks for oracy and graphicacy in technical education. This study addresses those gaps by providing a workshop which allows participants to create an oracy and graphicacy model/ framework designed to be implemented into the technical subjects in Ireland (Chapter Seven). Through the promotion and development of oracy and graphicacy training within the case ITE programme, this study contributes to the continuous professional development (CPD) of PS teachers and staff in this area.

8.4 Strengths and Limitations of the Research

The literature review identified gaps in oracy and graphicacy frameworks in ITE; however, this research is unique in that it was conducted in an Irish ITE programme in the field of technical education. As a result, this research contributes to the literature by developing a response (workshop series) to the case study's need to improve oracy and graphicacy and providing knowledge for future development in this area, making this one of the research’s strengths. Another strength of this study is the data analysis, which is robust, trustworthy, and methodical. The data analysis coding procedure involved two coders, the researcher and an outside coder, and followed Colaizzi's *Seven-Step Method for Data Analysis* stages one through six (see Section 5.2.2). Since the final step involved discussions with specialists to verify the analysis's credibility, this method of analysis allowed for extensive data analysis, which increased the effectiveness of the data analysis process.

Limitations of this research included a bounded case study on one specified ITE programme which focuses on the development of technical teachers in the subjects of WT and G. This is considered a limitation as it doesn’t allow for the generalisation on all ITE programmes pertaining to technical education in Ireland or further. This research study was conducted wholly online due to the implications of COVID-19, this restricted the study as only online data collection methods could be utilised for the primary research stage. Due to interviews and focus groups being conducted through MS Teams it was difficult to interpret nonverbal communication such as eye contact, facial expressions, and body language. This is an important aspect to consider as the expressive power of body language is equal to that of spoken discourse (Abdulrahman et al., 2022).

Another challenge included the lack of prior research pertaining to graphicacy internationally and in Ireland. Oracy research was more widely available although in terms of Irish literature in technical education it wasn’t very plentiful. This study utilised questionnaires with PS teachers, for that reason this study lacked ecological validity as the behaviour and actions of PS teachers weren’t assessed and observed in real life. For clarity, the realism with which a design of evaluation setup matches the user's actual work context is referred to as ecological validity (Hartson & Pyla, 2012).

8.5 Research Recommendations

There are four main recommendations which arise out of this research study. These are:

1. To integrate explicit oracy and graphicacy strategies into the teaching, learning and assessment design plan for all module descriptors on the case study programme.

2. To implement an oracy and graphicacy training workshop for management, lecturing staff, school placement tutors, and pre-service teachers prior to school placement in the academic year 2023-2024, with the intention of enhancing oracy and graphicacy skill development and practice, as informed by this research.

3. To conduct a critical evaluation of PS teachers’ knowledge and skills in oracy and graphicacy after the implementation of the developed technical models from the workshop to assess the effectiveness of each. By considering these suggestions, the ITE programme will establish a consistent definition and understanding of oracy and graphicacy from PS teachers to management across all programme modules, minimising the loss of translation from staff to students.

4. To create a comprehensive literacy, numeracy, oracy, and graphicacy workshop for ITE programmes in Ireland, in partnership with Patricia O’ Regan. It is suggested that the workshop be delivered as a pilot on the ITE programme in ATU, as a part of an action research study.

Chapter Nine: Bibliography

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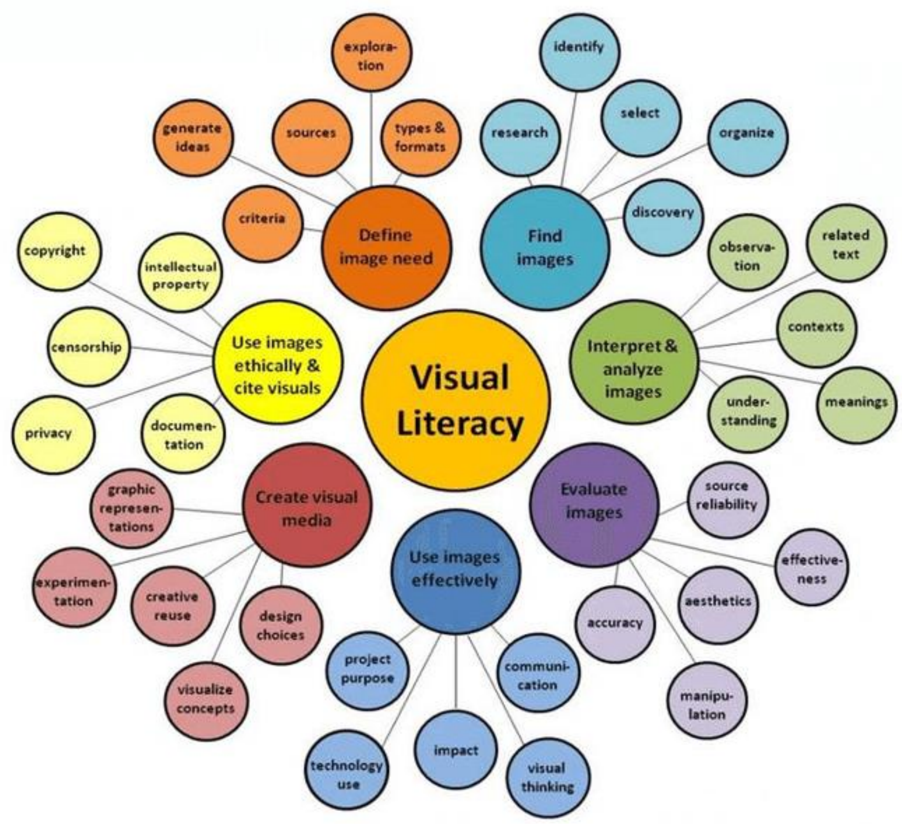
APPENDICES

Appendix 1: ACRL's Visual Literacy Array created by Hattwig, Bussert, Medaille, & Burgess (2013)



Appendix 2: Analysis of Subject Inspection Reports – Example

	Subject Inspectorate Reports			
	2019			
	SUBJECTS: TG + DCG	COMMENTS		
	SCHOOLS	ORACY	GRAPHICACY	OTHER (Literacy/ Numeracy)
1	Westmeath - Athlone Community College	**presentation skills** were appropriate to their stage in most instances.	Digital technologies were used very successfully in all lessons to support learning and **visualisation.**	
2	Cork - St. Brogan's College, Bandon		**graphical concepts and constructions** were accurately displayed. students' **drawing skills** were good.Parametric modelling was used as a teaching tool.... support students' **visualisation**	
3	Offaly - St.Brendan's Community School		Learning primarily concentrated on developing students' **spatial visualisation**, problem-solving and drafting skills. deployment of physical models and digital representations of student	
4	Tipperary - Cashel Community School		creation and manipulation of **parametric models** and the use of **augmented reality** to support students' **visualisation of three-dimensional objects.**	
5	Cork - Scoil Na Mbráithre Chríostaí		development was identified in the area of **freehand sketching**. The presentation techniques currently employed by the subject department require further	
6	Limerick - Ardscoil Rís	**Oral literacy** was well attended in most lessons; for example, students were provided with opportunities to give feedback to small groups of their peers.	integration of **parametric modelling software** into the TG programme is effective in **helping advance students' understanding** of difficult concepts.	

Appendix 3: PS Teacher Questionnaire

Oracy and Graphicacy Questionnaire (1st Year)

Research Title: Embedding Best Practice Oracy and Graphicacy Skills Development in Post-Primary Technical Education with Particular Focus on Online Learning.
Primary Researcher: Leanne Cosgrove

* Required

By completing and submitting this questionnaire you are agreeing to the use of its data.

1. What is your gender? *

- ◯ Female
- ◯ Male
- ◯ Other
- ◯ Prefer not to say

2. Explain the term 'Oracy' in your own words: *

3. Explain the term 'Graphicacy' in your own words: *

4. Please list a series of skills related to Oracy *

5. Please list a series of skills related to Graphicacy *

6. How confident are you in your own Oracy and Graphicacy skills? *

	Not Confident at All	Slightly Confident	Somewhat Confident	Fairly Confident	Very Confident
Oracy	○	○	○	○	○
Graphicacy	○	○	○	○	○

7. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Oracy skills most, by dragging the choice boxes. *

The very first module listed will be the module that you believe you've developed your Oracy skills most in, and the last will the module that you believe you developed your Oracy skills the least in.

- Learning and Innovation Skills
- Manufacturing Skills 1
- School Placement 1
- Design Elements
- Education Projects 1
- Technical Graphics
- Materials and Techniques

8. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes. *

The very first module listed will be the module that you believe you've developed your Graphicacy skills most in, and the last will the module that you believe you developed your Graphicacy skills the least in.

- Learning and Innovation Skills
- Manufacturing Skills 1
- School Placement 1
- Design Elements
- Education Projects 1
- Technical Graphics
- Materials and Techniques

9. Rate how confident you are in the Oracy Skills listed below. *

	Not Confident at All	Slightly Confident	Somewhat Confident	Fairly Confident	Very Confident
Public Speaking	○	○	○	○	○
Debating	○	○	○	○	○
Presenting Posters/ PowerPoints	○	○	○	○	○
Animated Videos/ PowerPoints	○	○	○	○	○
Discussing	○	○	○	○	○
Interviews	○	○	○	○	○
Group Work	○	○	○	○	○
Professional Meetings	○	○	○	○	○
Speeches	○	○	○	○	○
Voice Projection	○	○	○	○	○

10. Rate how confident you are in the Graphicacy Skills listed below. *

	Not Confident at All	Slightly Confident	Somewhat Confident	Fairly Confident	Very Confident
Interpreting Maps	◯	◯	◯	◯	◯
Interpreting Plans	◯	◯	◯	◯	◯
Interpreting Drawings	◯	◯	◯	◯	◯
Interpreting Diagrams	◯	◯	◯	◯	◯
Interpreting Tables	◯	◯	◯	◯	◯
Interpreting Graphs	◯	◯	◯	◯	◯
3D to 2D Visualization	◯	◯	◯	◯	◯
2D to 3D Visualization	◯	◯	◯	◯	◯
Designing	◯	◯	◯	◯	◯
Technical Drawing	◯	◯	◯	◯	◯
Freehand Sketching	◯	◯	◯	◯	◯

11. What strategies do you use in your classroom to promote the development of Oracy? *

12. What strategies do you use in your classroom to promote the development of Graphicacy? *

13. While on the B.Sc in Education programme, how have you learned to promote Oracy in the classroom? *

Explain your answer.

14. While on the B.Sc in Education programme, how have you learned to promote Graphicacy in the classroom? *

Explain your answer.

15. What assessment methods do you use to assess Oracy in your classroom? *

16. What assessment methods do you use to assess Graphicacy in your classroom? *

17. Do you think Oracy skills are important in Technical Education? *

- Yes
- No

18. Why do you think Oracy skills ARE important in Technical Education?

19. Why do you think Oracy skills are NOT important in Technical Education?

20. Do you think Graphicacy skills are important in Technical Education? *

- Yes
- No

21. Why do you think Graphicacy skills ARE important in Technical Education?

22. Why do you think Graphicacy skills are NOT important in Technical Education?

23. Give examples of how you would promote Oracy Skills Development in Online Learning. *

Example: strategies, software, applications, etc.

24. Give examples of how you would promote Graphicacy Skills Development in Online Learning. *

Example: strategies, software, applications, etc.

25. What suggestions, if any, do you have to help improve the development of Oracy skills on the B.Sc in Education Programme? *

26. What suggestions, if any, do you have to help improve the development of Graphicacy skills on the B.Sc in Education Programme? *

27. Please add any further comments if you wish. *

Appendix 4: Research Information & Informed Consent – Questionnaire, Focus Group & Interviews

MSc In Education

RESEARCH ETHICS DOCUMENT

GALWAY-MAYO INSTITUTE OF TECHNOLOGY

RESEARCH TITLE: EMBEDDING BEST PRACTICE ORACY AND GRAPHICACY SKILLS DEVELOPMENT IN POST-PRIMARY TECHNICAL EDUCATION WITH PARTICULAR FOCUS ON ONLINE LEARNING.

RESEARCHER: LEANNE COSGROVE

PARTICIPANT INFORMATION LEAFLET

1. **Working Title of the Study:**

Embedding Best Practice Oracy and Graphicacy Skills Development in Post Primary Technical Education with Particular Focus on Online Learning

2. **Introduction to the Study:**

The promotion of Oracy and Graphicacy is a significant theme in Initial Teacher Education (ITE). 'Literacy and numeracy' are an overarching category, with several inter-related sub-sets, some of which have received lesser attention, not least, Oracy and Graphicacy, both of which skills are central to initial teacher education (ITE) in the field of technical education. This research project investigates best practices when embedding Oracy and Graphicacy skills development in post primary technical education, with a focus on Online Learning, with the focal point of the case study on the ITE programme in GMIT Letterfrack *'B. Sc in Education (Design, Graphics and Construction)'.* This exploratory research involves questionnaires (with Student Teachers on the B. Sc in Education Programme) and a focus group (with School Placement Lecturers and Tutors). The research requires honest responses and feedback hence the questionnaires are anonymous.

3. **Research Procedures:**

Data will be gathered through online due to COVID-19 restrictions. There will be two sections:

1. Questionnaire with student teachers from 1st year to 4th year on the B. Sc in Education programme in GMIT Letterfrack, the researcher will give instructions and assistance in the completion of the questionnaire.
2. Focus group will take place with School Placement Tutors and Lecturers on the B. Sc in Education programme in GMIT Letterfrack.

4. **Benefits of the Research:**

Little has been published on oracy and graphicacy in second level or third level education in Ireland to date, making this contribution an important and original contribution. It is hoped that the research will lead to a positive impact in the TE programme, in Galway- Mayo Institute of Technology (GMIT) through purposefully embedding oracy and graphicacy into the curriculum.

5. **Risks of the Research**:

There are no material risks, discomforts or side effects associated with this research.

6. **Exclusion from Participation**: You cannot participate in this study if you are not a student teacher on the B. Sc. in Education programme at GMIT, Letterfrack, or School Placement Tutor on the programme.

7. **Confidentiality:** No identifying factors relating to participants will be in evidence in the final thesis report and/or any disseminated research (i.e., conference papers and/or presentations, publications, etc.) Those who will have access to your identity include members of the Research Advisory Panel, internal examiners, and external examiner(s).

8. **Compensation:** This study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

9. **Voluntary Participation:** You have volunteered to participate in this study. If you wish to withdraw, please contact the researcher within one month of initial participation. If you decide not to participate or if you withdraw you will not be penalised and will not give up any benefits that you had before entering the study.

10. **Stopping the Study:** You understand that the researcher(s) may withdraw you from participation in the study at any time without your consent.

11. **Permission**: This research has approval from the GMIT/ Research Sub Committee of Academic Council.

12. **Further Information:** You can get more information or answers to your questions about the study, your participation in the study and your rights, from Leanne Cosgrove who can be telephoned at 086 737 5141 or e-mailed at G00347244@gmit.ie.

13. **New Information Arising:** If the researcher or members of the Research Advisory Panel learn of important new information that might affect your desire to remain in the study, or if any conflicts of interest emerge during the course of the study, you will be informed at once.

INFORMED CONSENT FORM 1:

INDIVIDUAL RESEARCH PARTICIPANTS

Working Title: Embedding Best Practice Oracy and Graphicacy Skills Development in Post Primary Technical Education with Particular Focus on Online Learning		
Principal Researcher: Leanne Cosgrove (G00347244@gmit.ie)		
Background to the Study: Oracy and Graphicacy is a significant theme in the training of second-level technical teachers. This research project investigates ways to embed best practice oracy and graphicacy skills development in post primary technical education with particular focus on online learning, basing the research on GMIT Letterfrack's *B. Sc in Education (Honours) degree programme***.**		
Participant Declaration (Highlight 'Yes' or 'No', as appropriate.)		
I have read or have had the information sheet read to me and I understand the contents.	**Yes**	**No**
I have been given an opportunity to ask questions and am satisfied with the answers.	**Yes**	**No**
I have given consent to take part in the study.	**Yes**	**No**
I understand that participation is voluntary and if I wish to withdraw, I can do so within one month of initial participation.	**Yes**	**No**

I understand that withdrawal will not affect my access to services or legal rights.	**Yes**	**No**
I consent to possible publication of results.	**Yes**	**No**
I (the participant) give my permission for the data obtained from me to be used in other future studies without the need for additional consent.	**Yes**	**No**

Participant Statement:
I have read or had read to me this consent form. I have had the opportunity to ask questions, and all my questions have been answered to my satisfaction. I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights. I understand I may withdraw from the study at any time. I have received a copy of this consent form.

Please Tick: **YES** ☐ **NO** ☐

Participant Signature: ____________________

Date: ____ **/04/21**

Researcher Declaration (Highlight 'Yes' or 'No', as appropriate.)		
I have explained the study to the participant.	**Yes**	**No**
I have answered questions put to me by the participant about the research.	**Yes**	**No**
I believe that the participant understands and is freely giving consent.	**Yes**	**No**

Researcher Statement:
I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I offered to answer any questions and have fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

Researcher Signature: ____________________

Date: ____ **/04/21** Kearne Cosgrove

INFORMED CONSENT FORM 2:

RESEARCH PARTICIPANTS

INFORMATION SHEET	
Purpose of the research study.	For the Master's programme at GMIT I am required to carry out a research study. This survey aims to embed best practice oracy and graphicacy skills development in post primary technical education with particular focus on online learning. The research project is concerned with developing oracy and graphicacy skills for students of the teacher education programme at GMIT Letterfrack, with a view to making recommendations to address oracy and graphicacy with a focus on online learning needs within the programme.
What the research study will involve.	The study will involve students and tutors of the teacher education programme at GMIT Letterfrack, answering questions and giving their opinions on their own oracy and graphicacy skills, the provision for such training within the programme and ways to promote the development of these skills through online learning. This will happen by way of a questionnaire with student teachers and a focus group with tutors and lecturers, both will be completed through online MS Teams meetings due to COVID-19.

Why you have been asked to take part in this research study.	The researcher has chosen both student teachers and School Placement tutors to take part in this study because they have experienced first-hand what is being provided in terms of oracy and graphicacy training in the teacher education programme at GMIT Letterfrack. Student teachers and School Placement tutors and lecturers may be able to provide insight into ways that this aspect of the programme can be developed to benefit them through learning in the classroom and online learning.
The confidentiality of your participation in the research study.	Those who will have access to the research data include: the primary researcher, members of the Research Advisory Panel (including the research supervisors), internal examiners and external examiners.
What will happen to the information which you give?	The information that is given in this questionnaire and focus group will be kept confidential from any third parties. The data will be kept confidential for the duration of the study. On completion of the thesis, it will be retained for a further five years in a secure environment and then destroyed.
What will happen to the results?	The results will be presented in the thesis. They will be seen by my supervisors, a second marker and the external examiner. The thesis may be read by future students on the course. The research findings and analysis may be disseminated in future conferences and academic publications.
Are there any possible disadvantages of taking part?	There are no material risks, discomforts or side effects associated with this research. A possible disadvantage of taking part in a focus group or interview is giving up your time.
If a problem arises in relation to research participation.	If you wish to withdraw from this study, you are free to do so within one month of participation (without providing a reason). To withdraw, you should contact the principal researcher, Leanne Cosgrove who can be telephoned at 086 737 5141 or e-mailed at G00347244@gmit.ie
Which body has reviewed this study from the perspective of ethical clearance?	The Research Sub Committee of Academic Council.
Any further queries?	If you need any further information, you can contact me: Leanne Cosgrove at 086 737 5141 or G00347244@gmit.ie
By completing and submitting this questionnaire and/or by participating in the breakout circles you are agreeing that any related data obtained may be used in this research study and in any future dissemination of the research.	

Appendix 5: Focus Group Guide Questions

Lecturer Focus Group: Guide Questions

1. Oracy

- What do ye understand from the term ‘Oracy’?
- Can you all agree a definition?
- What are some examples of what Oracy looks like from your own practice?
- What are some Post-Primary Classroom examples?

2. Graphicacy

- What do you understand from the term ‘Graphicacy’?
- Can you all agree a definition?
- What are some examples of what Graphicacy looks like from your own practice?
- What are some Post-Primary Classroom examples?

3. Findings From Initial Analysis of Student Questionnaires – A Lecturers Perspective

1. Majority of students in Years 1 and 2 only a have a basic understanding of what O&G is and could list basic skills encompassed by both.

    a. why do you think this may be the case?

2. Years 3 and 4 have a good understanding of what O&G is and they were able to give greater examples of skills relating to both O&G.

    a. why do you think there might be this pattern between Years 1 + 2 and years 3 + 4?

3. Students are more confident in their G skills in comparison to their O skills.

(O: most confident = group work + presenting posters/ presentations. Least confident = speeches + debating)

(G: most confident - interpreting drawings and plans. Least confident - designing and freehand sketching)

    a. why do you think this?

    b. how might you change this?

4. The in-classroom-examples of O&G were of a basic level, particularly for Years 1 & 2. *(Promoting O&G – basic – few subject examples)*

    a. why may this be the case?

5. Many students were not able to give assessment methods to assess O and some were very basic examples. *(Like questioning)*

    a. *Can you suggest a reason for this finding?*

4. Training

- Have you received any O or G training to date?
- How do you/ might you model a variety of practices in your module?
- How do you think you can be more effective in teaching O&G?
- Do you think training is needed or would benefit your teaching?

5. Assessment

Tutors

- In the SP rubric – O, G, L, N are listed, how do you approach the assessment of Oracy and Graphicacy?
- Are you clear on how to assess Oracy and Graphicacy?
- Do you think a specific list of guidelines, or a rubric would benefit when assessing Oracy and Graphicacy?

6. Comments

Any additional comments, areas we have not touched on that you think may benefit my research in this area?

7. Circle of Reflection

What do we all individually need to do to encourage Oracy and Graphicacy Development in our teaching?

8. Thank you

Appendix 6: Head of Department (M1) Interview Guide Questions

MSC IN EDUCATION

RESEARCHER: LEANNE COSGROVE

Research Title: Embedding Best Practice Oracy and Graphicacy Skills Development in Post-Primary Technical Education with Particular Focus on Online Learning.

Head of Department Interview: M1

Researcher: Leanne Cosgrove

HEAD OF DEPARTMENT INTERVIEW

Hi M1, how are you? Thanks for taking the time to meet me here today.

If it is okay with you, I will start recording

Start recording

So, M1, just before we get into the interview itself, I'll give you a quick overview on how this session will go – introduction – issue of consent – list of questions in a conversational style manner.

Introduction – aware at this stage that I am a masters student studying the title: embedding best practice oracy and graphicacy skills development in post-primary technical education with particular focus on online learning. **An element of my study** is a case study on GMIT's programme B.Sc. in Education (Design, Graphics, and construction) – which you are Programme Chair of. The **case study aims** to critique current oracy and graphicacy practices and identify best practices. I have already **gained insight into the student's** experiences through a questionnaire and the lecturing staff's perspectives through a focus group, I am working my way up the ladder to you – programme chair and then to the head of department.

Consent – I have sent you the **participant information leaflet** previously which gives more details about the study itself and encompasses a **consent form**, if you agree to participate in the interview could you please electronically sign and return after the interview please. M1 have you any issues with **being recorded for this interview**?

Before getting onto the questions, I just want to note that as you play a **public role in GMIT** I want to make you aware that although I will code you throughout the thesis you will not be completely anonymous as you can be identified easily online. Are you happy with just being coded throughout the thesis or would you like to be named?

If you are ready, we can begin...

GMIT Department of Creative Education - Head of Department Interview Questions – M1 Thurs @3:30-4:00pm

Questions

1. What roles do you play as Head of Department in GMIT Department of Creative Education?
2. What is your understanding of Oracy? (personal)

   What is your understanding of Oracy regarding your department?
3. What is your understanding of Graphicacy? (personal)

   What is your understanding of Graphicacy regarding your department?
4. Do you think there has been adequate emphasis on oracy education throughout the TE programme? How could this be improved?
5. Do you think there has been adequate emphasis on graphicacy education throughout the TE programme? How could this be improved?
6. From my research I have not found policies relating to oracy and graphicacy in the institute - Are you aware of any such policies? **(Department and wider Institute)

   While this research is a bounded case study, do you think the department could play a role in developing and advocating policies on Oracy and Graphicacy in the institute?
7. Are you aware of any staff training regarding the areas of Oracy and Graphicacy to date? If so, could you share some information about that? If not, do you think a workshop/ training day is necessary for staff?
8. M1 I am aware that you were one of the leaders who brought funding for this master's Research Study, do you see that you have a role to promote oracy and graphicacy?
9. What creative Oracy and Graphicacy examples have you seen implemented in the programme? Are there other examples that have not been explored or developed?
10. How could you see oracy and graphicacy incrementally implemented in the programme over the four years?
11. Are there structures in places to promote oracy and graphicacy in a co-ordinated way?

If not, what roles can the programme board and programmatic reviews play to promote oracy and graphicacy in your view?

12. What is the process involved in embedding oracy and graphicacy in the case study programme?
13. Would staff typically come to you to enquire about training needs? If so, have any staff members enquired about support in oracy and graphicacy?
14. Can you suggest a means by which lecturers can adopt a more structured approach to implementing oracy and graphicacy?
15. What structural initiatives could be put in place to ensure excellence in this area?
16. A. What are the opportunities of embedding oracy and graphicacy in online teaching?
    B. What are the challenges of embedding oracy and graphicacy in online teaching?
17. Are there any functionalities of the GMIT platforms to help embed oracy and graphicacy? Can you name some?
18. What might be a beneficial output from this research for the programme?
19. Is there anything that you would like to add as we bring the interview to a close?

Appendix 7: Programme Chair (M2) Interview Guide Questions

MSC IN EDUCATION

RESEARCHER: LEANNE COSGROVE

Research Title: Embedding Best Practice Oracy and Graphicacy Skills Development in Post-Primary Technical Education with Particular Focus on Online Learning.

Programme Chair Interview: M2

Researcher: Leanne Cosgrove

PROGRAMME CHAIR INTERVIEW

Hi M2 how are you? Thanks for taking the time to meet mé here today.

If it is okay with you I will start recording

start recording

So M2, just before we get into the interview itself I'll give you a quick overview on how this session will go – introduction – issue of consent – list of questions in a conversational style manner.

Introduction – well aware at this stage that I am a masters student studying the title: embedding best practice oracy and graphicacy skills development in post-primary technical education with particular focus on online learning. **An element of my study** is a case study on GMIT's programme B.Sc in Education (Design, Graphics and construction) – which you are Programme Chair of. The **case study aims** to critique current oracy and graphicacy practices and identify best practices. I have already **gained insight into the students** experiences through a questionnaire and the lecturing staffs perspectives through a focus group, I am working my way up the ladder to you – programme chair and then to the head of department.

Consent – i have sent you the **participant information leaflet** previously which gives more details about the study itself and encompasses a **consent form**, if you agree to participate in the interview could you please electronically sign and return after the interview please. M2 have you any issues with **being recorded for this interview**?

Before getting onto the questions I just want to note that as you play a **public role in GMIT** I want to make you aware that although I will code you throughout the thesis you will not be completely anonymous as you can be identified easily online. Are you happy with just being coded throughout the thesis or would you like to be named?

If you are ready we can begin…

GMIT Department of Creative Education – Programme Chair – M2 Thurs @2-3pm

Questions:

1. What roles do you play as Programme Chair of the B. Sc in Education?
2. What is your understanding of Oracy? (personal)

    What is your understanding of oracy regarding your department?
3. What is your understanding of Graphicacy? (personal)

    What is your understanding of graphicacy regarding your department?
4. Do you think there has been adequate emphasis on oracy education throughout the TE programme? How could this be improved?
5. Do you think there has been adequate emphasis on graphicacy education throughout the TE programme? How could this be improved?
6. Are you aware of any staff training regarding the areas of Oracy and Graphicacy to date? If so, could you share some information about this? If not, do you think a workshop/ training day is necessary for staff?
7. What creative Oracy and Graphicacy examples have you seen implemented in the programme? Are there other examples that have not been explored or developed?
8. How could you see oracy and graphicacy incrementally implemented in the programme over the four years?
9. Are there structures in places to promote oracy and graphicacy in a co-ordinated way?

    If not, what roles can the programme board and programmatic reviews play to promote oracy and graphicacy in your view? (see 12)
10. Would staff typically come to you to enquire about training needs? If so, have any staff members enquired about support in oracy and graphicacy?
11. Can you suggest a means by which lecturers can adopt a more structured approach to implementing oracy and graphicacy?
12. Could you share the current approach to the assessment of oracy and graphicacy on school placement?
13. A. What are the opportunities of embedding oracy and graphicacy in online teaching?

    B. What are the challenges of embedding oracy and graphicacy in online teaching?

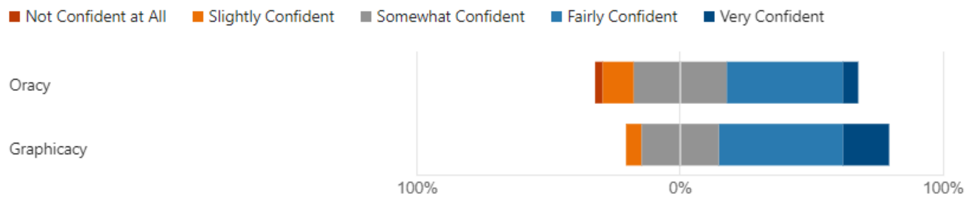
14. Are there any functionalities of the GMIT platforms to help embed oracy and graphicacy? Can you name some.
15. What structural initiatives could be put in place to ensure excellence in this area?
16. What might be a beneficial output from this research for the programme?
17. Is there anything that you would like to add as we bring the interview to a close?

Appendix 8: PS Teacher Confidence in Oracy and Graphicacy - Q6

Year 1

6. How confident are you in your own Oracy and Graphicacy skills?

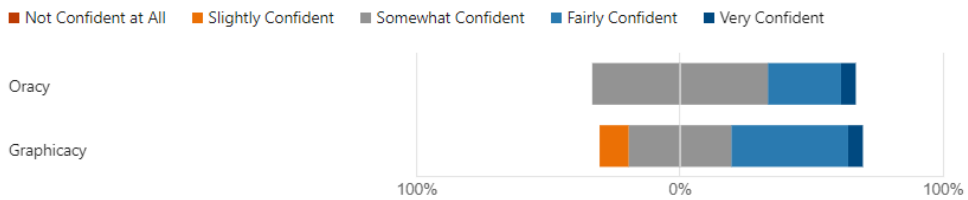
More Details



Year 2

6. How confident are you in your own Oracy and Graphicacy skills?

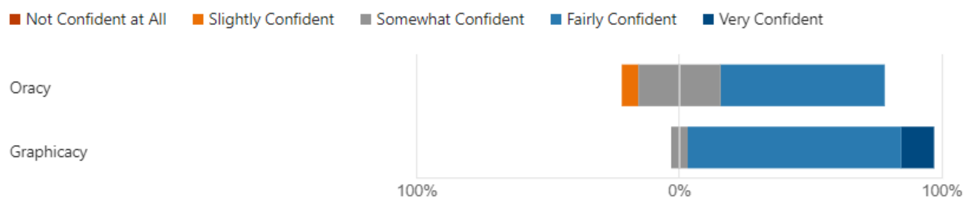
More Details



Year 3

6. How confident are you in your own Oracy and Graphicacy skills?

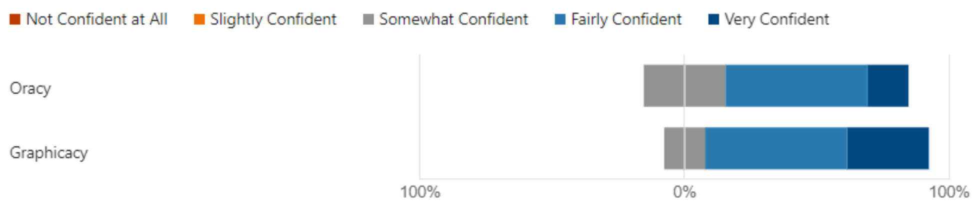
More Details



Year 4

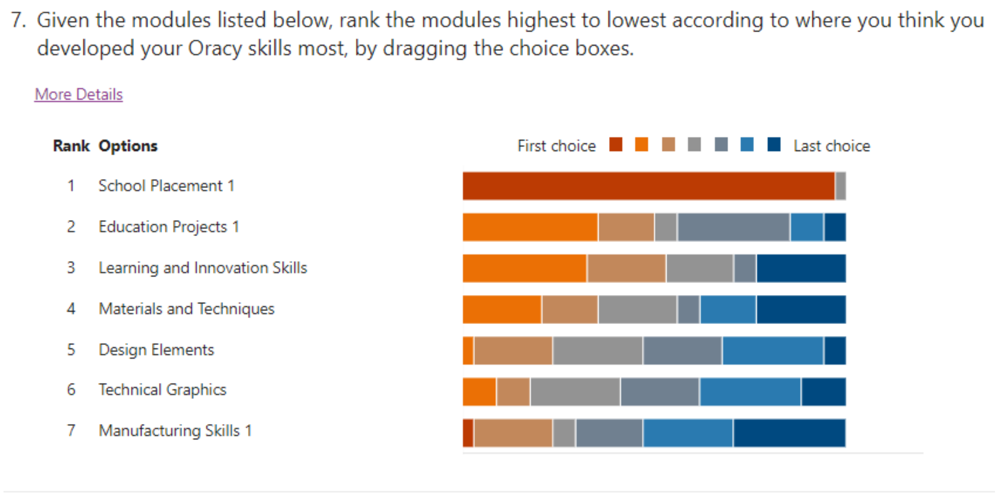
6. How confident are you in your own Oracy and Graphicacy skills?

More Details

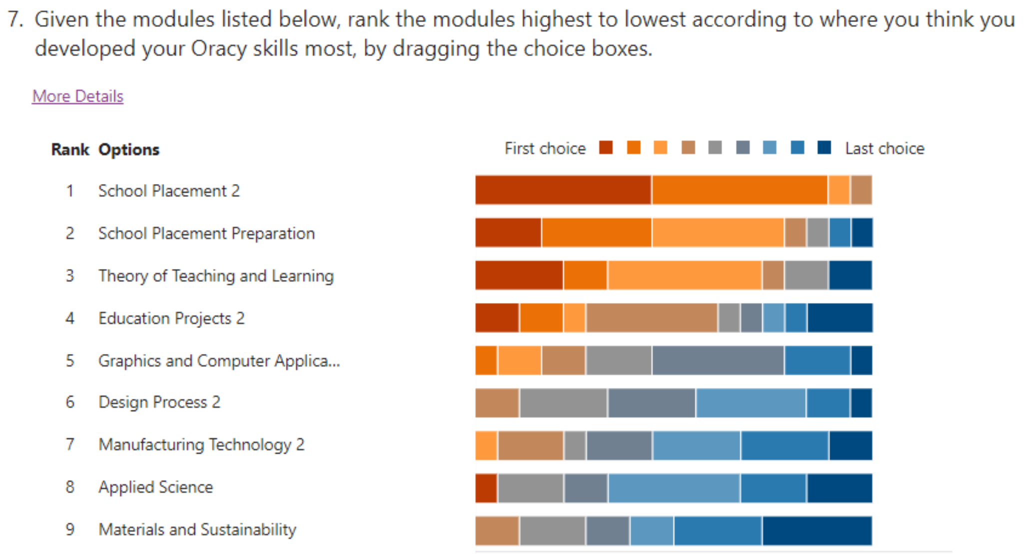


Appendix 9: PS Teacher Oracy Skills Development Within ITE Modules - Q7

Year 1



Year 2

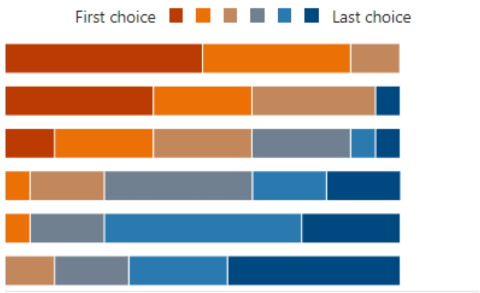


Year 3

7. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Oracy skills most, by dragging the choice boxes.

More Details

Rank	Options
1	School Placement 3
2	Curriculum and Assessment
3	Education Studies
4	Education Projects
5	Applied Graphics
6	Architectural Design

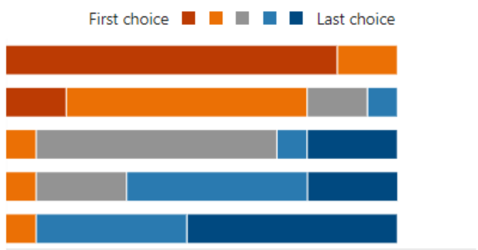


Year 4

7. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Oracy skills most, by dragging the choice boxes.

More Details

Rank	Options
1	School Placement 4
2	Professional Studies
3	Dissertation
4	Building Services and Technology
5	Advanced Graphics

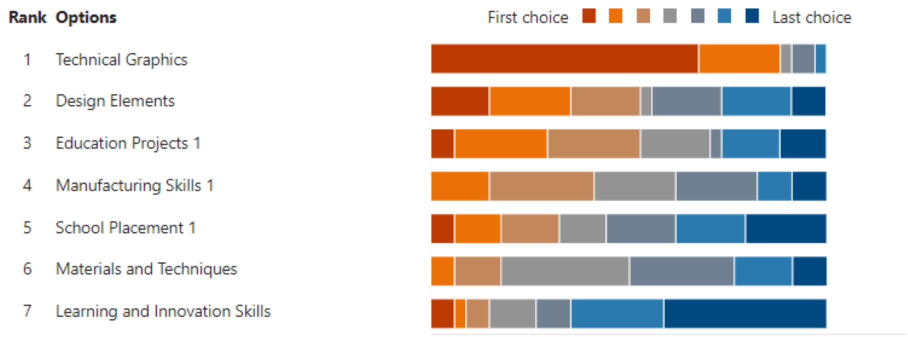


Appendix 10: PS Teacher Graphicacy Skills Development Within ITE Modules – Q8

Year 1

8. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes.

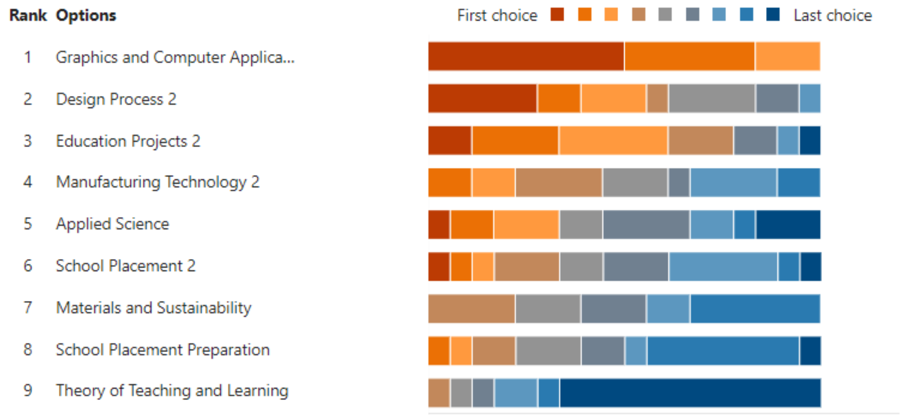
More Details



Year 2

8. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes.

More Details

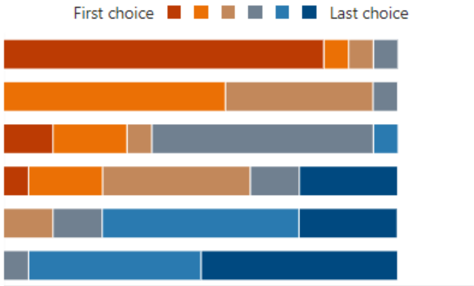


Year 3

8. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes.

More Details

Rank	Options
1	Applied Graphics
2	Architectural Design
3	School Placement 3
4	Education Projects
5	Curriculum and Assessment
6	Education Studies

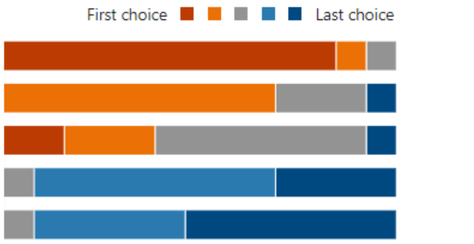


Year 4

8. Given the modules listed below, rank the modules highest to lowest according to where you think you developed your Graphicacy skills most, by dragging the choice boxes.

More Details

Rank	Options
1	Advanced Graphics
2	Building Services and Technology
3	School Placement 4
4	Professional Studies
5	Dissertation

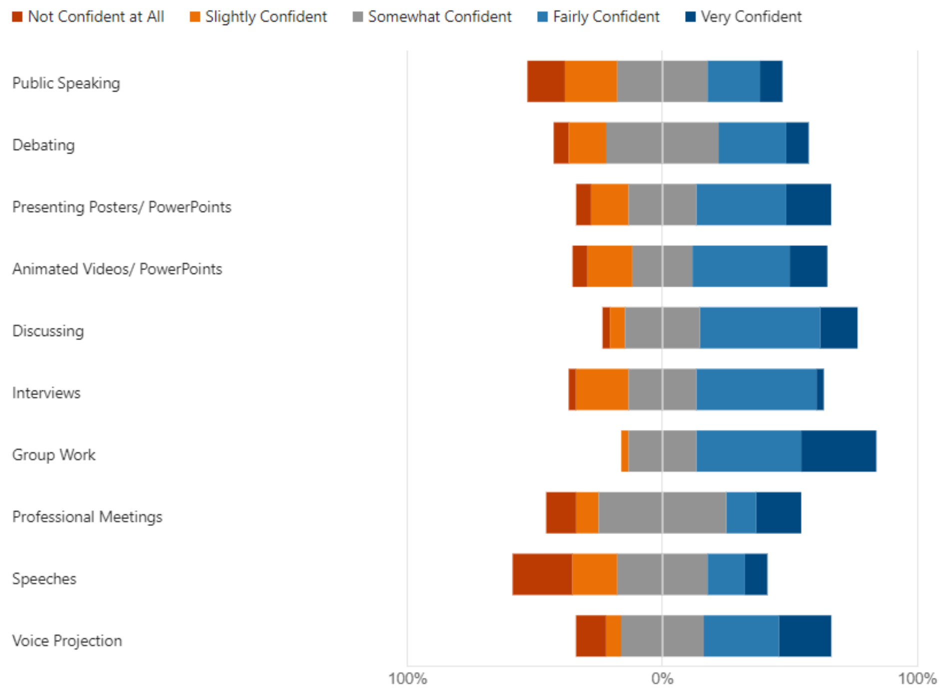


Appendix 11: PS Teacher's Confidence in Inidividual Oracy Skills – Q9

Year 1

9. Rate how confident you are in the Oracy Skills listed below.

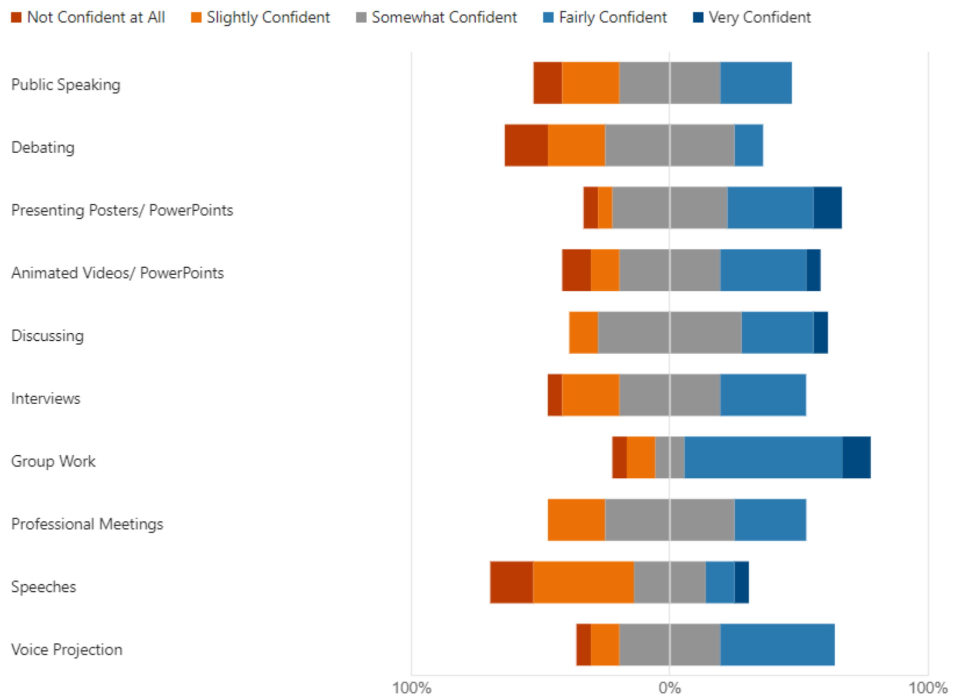
More Details



Year 2

9. Rate how confident you are in the Oracy Skills listed below.

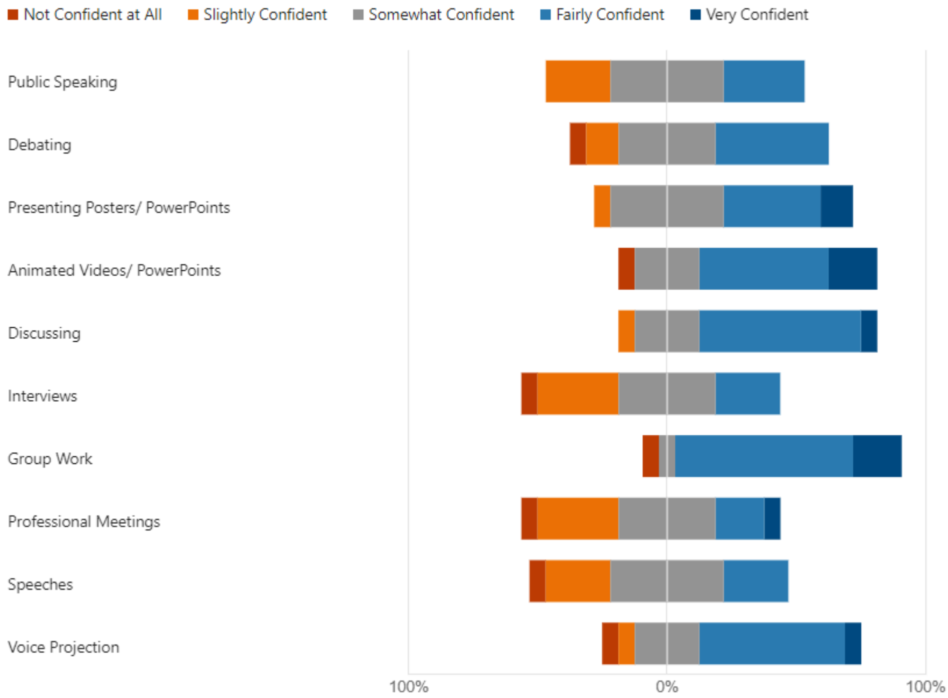
More Details



Year 3

9. Rate how confident you are in the Oracy Skills listed below.

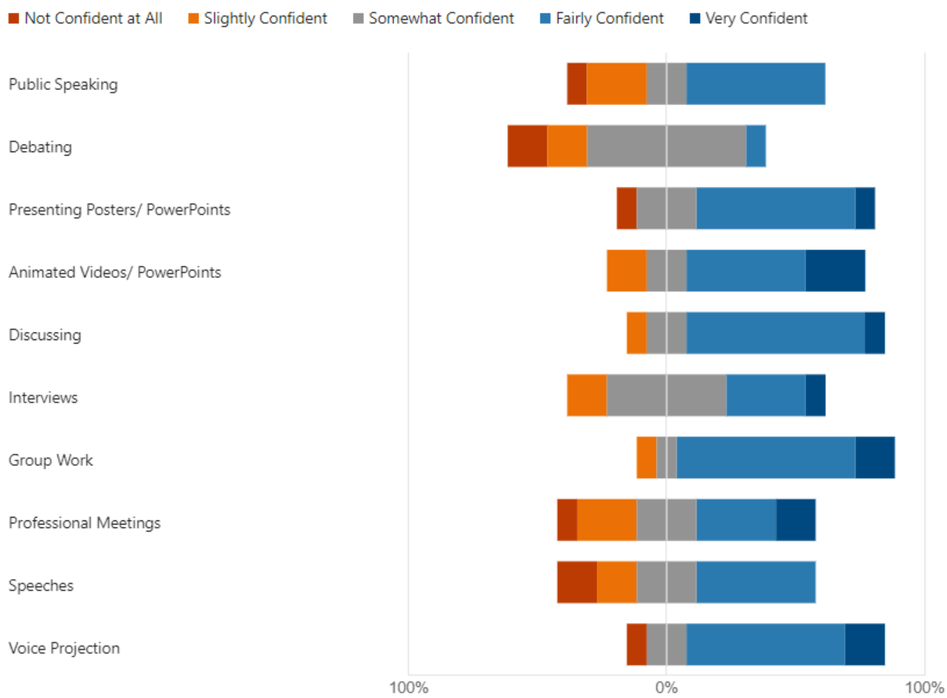
More Details



Year 4

9. Rate how confident you are in the Oracy Skills listed below.

More Details

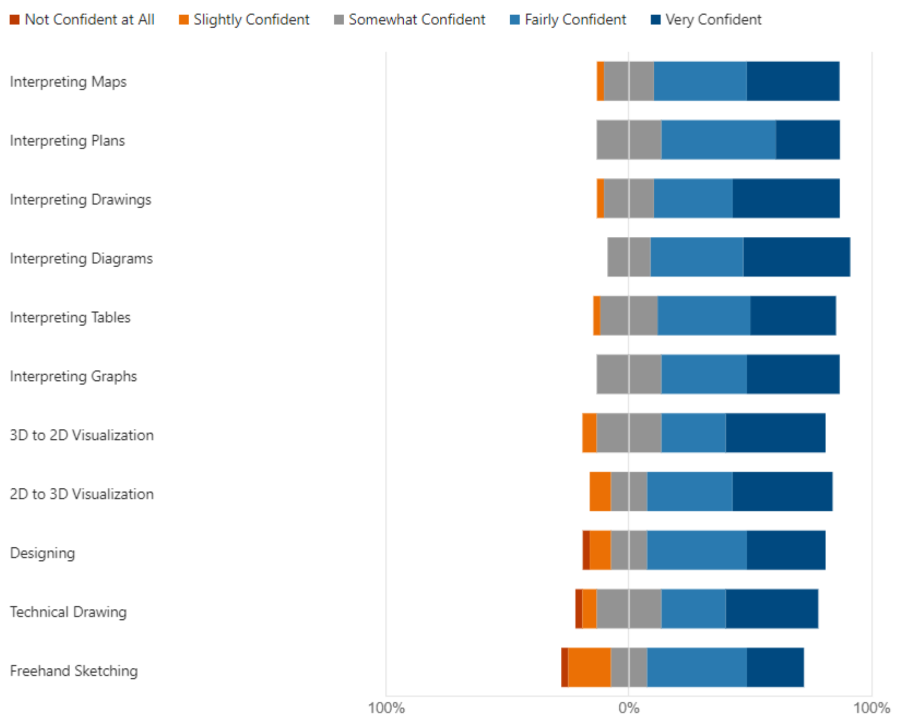


Appendix 12: PS Teacher's Confidence in Inidividual Graphicacy Skills – Q10

Year 1

10. Rate how confident you are in the Graphicacy Skills listed below.

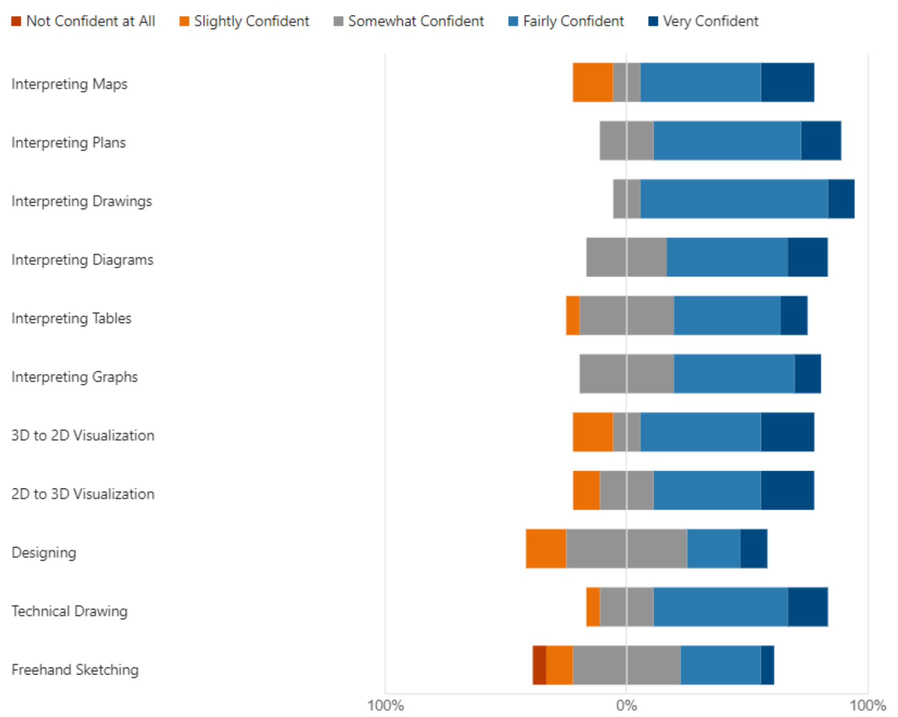
More Details



Year 2

10. Rate how confident you are in the Graphicacy Skills listed below.

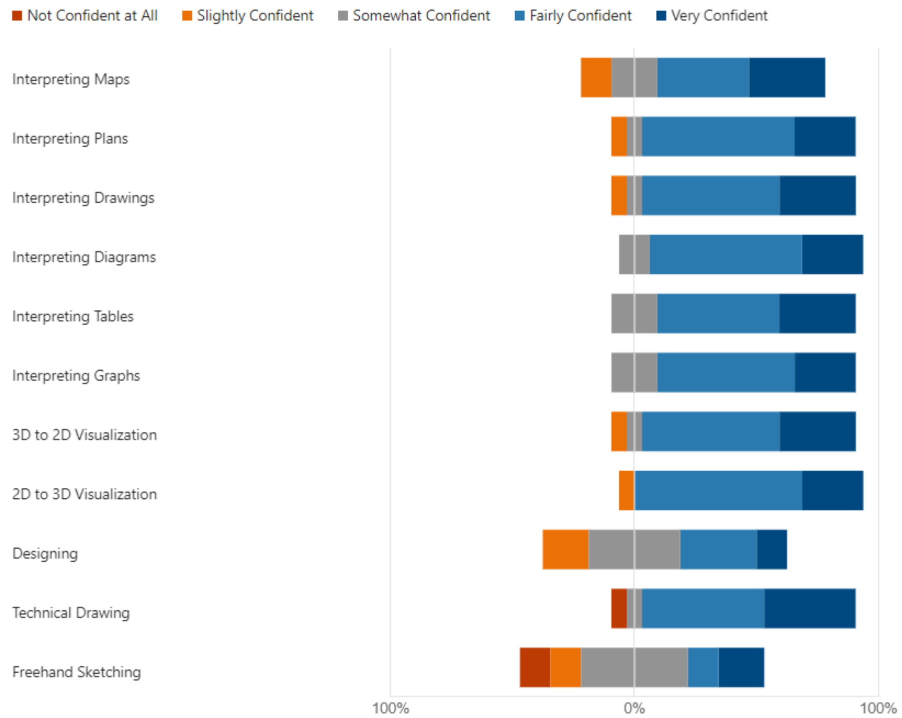
More Details



Year 3

10. Rate how confident you are in the Graphicacy Skills listed below.

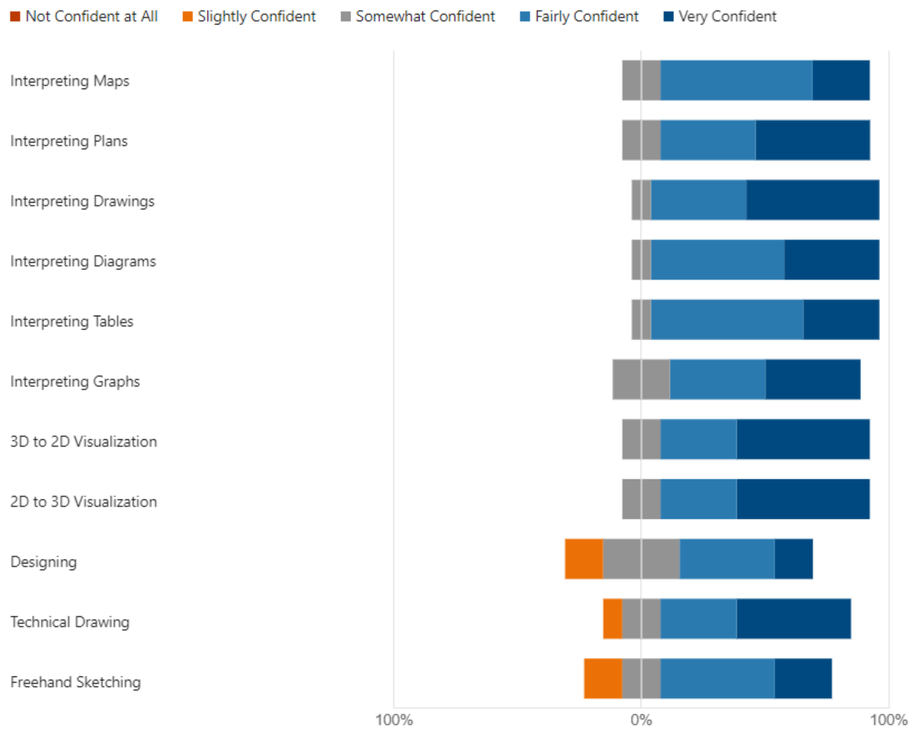
More Details



Year 4

10. Rate how confident you are in the Graphicacy Skills listed below.

More Details



Appendix 13: Oracy and Graphicacy Definition Frequency Table – Q2 & 3

Oracy

Keywords:	1st Year	2nd Year	3rd Year	4th Year	Total	Percentage
Ability	10	10	7	7	34	18%
Express	11	6	2	2	21	11%
Speak	8	7	2	3	20	11%
Speech/ Voice/ Conversation	5	4	5	3	17	9%
Terms/ Words	4	3	5	4	16	9%
Communicate	3	3	4	3	13	7%
Talk	6	3	1	3	13	7%
Read/ Interpret/ Understand	1	2	6	2	11	6%
Verbal	1	2	3	1	7	4%
Language	0	2	4	1	7	4%
Explain	3	1	3	0	7	4%
Ideas/ Thoughts	2	1	1	2	6	3%
Grammar/ Grammatically	3	3	0	0	6	3%
Confident/ Confidently	3	0	0	0	3	2%
Pronounce/ Pronounciation	0	1	1	2	4	2%
Listening	2	0	0	0	2	1%
Total	62	48	44	33	187	100%

Graphicacy

Keywords:	1st	2nd	3rd	4th	Total	Percentage
Ability	7	11	9	6	33	15%
Understand	11	7	5	4	27	12%
Drawings	7	6	7	4	24	11%
Maps	8	0	3	7	18	8%
Images/ Videos/ Media	6	1	6	2	15	7%
Sketches	4	2	5	3	14	6%
Visual/ Visualise	2	4	4	3	13	6%
Communicate	0	4	5	2	11	5%
Convey/ Present / Presentation	2	1	5	2	10	5%
Read	5	1	0	3	9	4%
Thoughts/ Ideas/ Emotions	1	2	2	2	7	3%
Graphics	1	4	2	0	7	3%
Diagram	3	1	2	1	7	3%
Charts	2	0	3	0	5	2%
Skills	1	0	0	4	5	2%
Express	1	2	1	0	4	2%
3	0	1	0	2	3	1%
Plans	1	0	1	0	2	1%
2	0	0	0	2	2	1%
Problem Solving	1	0	0	1	2	1%
Real life	0	0	1	1	2	1%
Number line	0	0	0	1	1	0.5%
Special Awareness	0	1	0	0	1	0.5%
	63	48	61	50	222	100%

Appendix 14: Oracy and Graphicacy Strategies Frequency Table – Q11 & 12

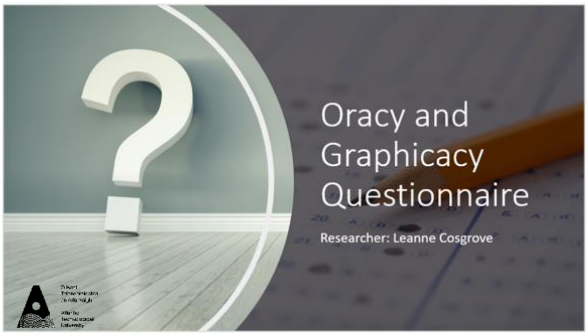
Oracy Strategies

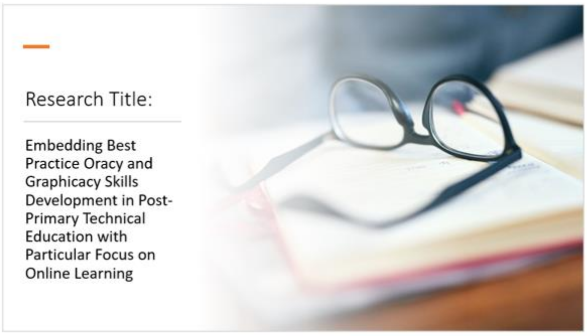
Oracy Strategy	Frequency
Group work/ Collaborative learning	28
Presentations	22
Questioning	22
Discussions	18
Debating	8
Word Walls	7
Reading Aloud	6
Public Speaking/ Speaking	5
Peer-teaching	3
Student led/ Flipped Classroom	3
Wakelet/ Submission of work orally	2
Exit Cards	1
Promote Spelling	1
Promote Pronounciation	1
Origin of Words	1
Think, Pair, Share	1
Peer-assessment	1

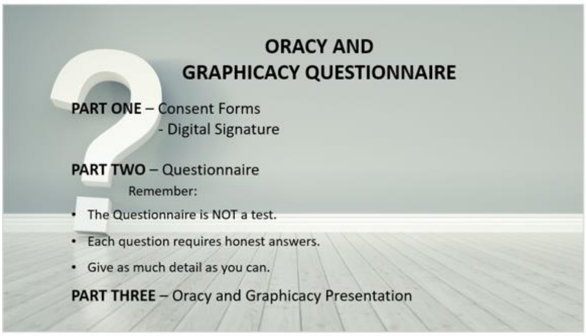
Graphicacy Strategies

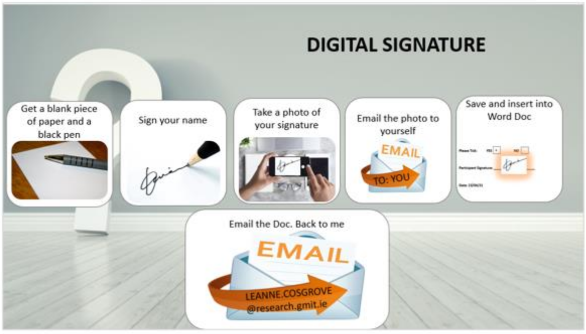
Graphicacy Strategy	Frequency
Sketching	28
Working Drawings	13
Graphs	13
Designing Projects	9
Posters	7
Images/ Pictures	7
Diagrams	7
Drawing on the board	4
3D Models	4
Presentations	4
Mind Maps	3
Videos	3
Problem based projects	3
Application to real life	3
Calculating Dimensions	2
Worksheets	2
Group work	2
Animation	2
Labelling	2
Project Briefs	1
Peer Review	1
Spider Diagram	1
Visualisations	1
Statistics	1
Health and Safety	1
Brainstorming	1
Planning	1

Appendix 15: PS Teacher Questionnaire PowerPoint Introduction

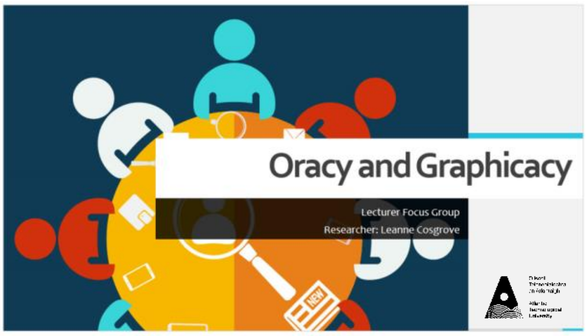


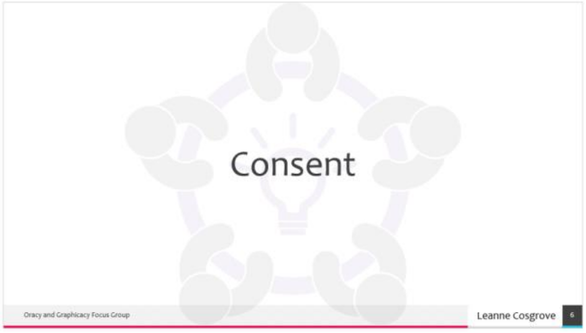


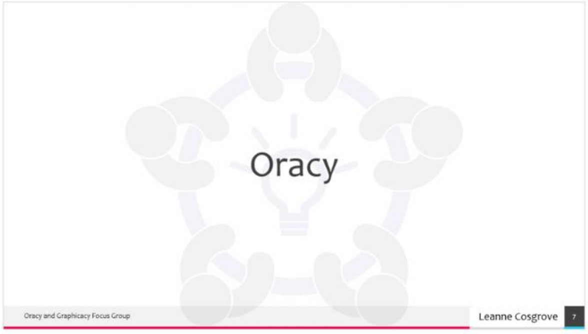


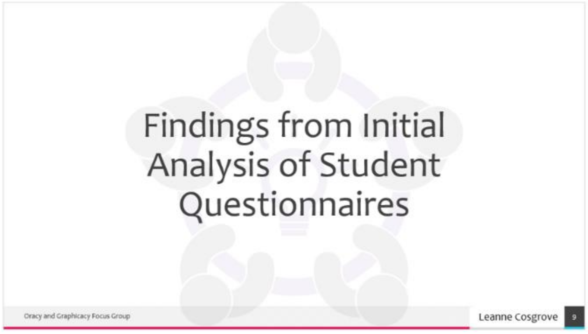


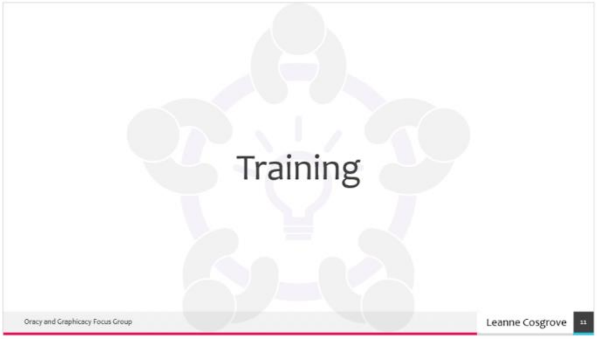
Appendix 16: Lecturer Focus Group PowerPoint



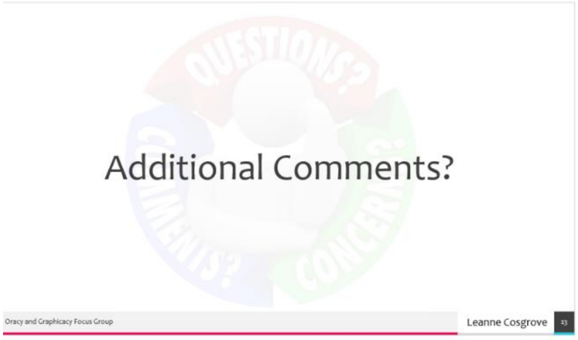


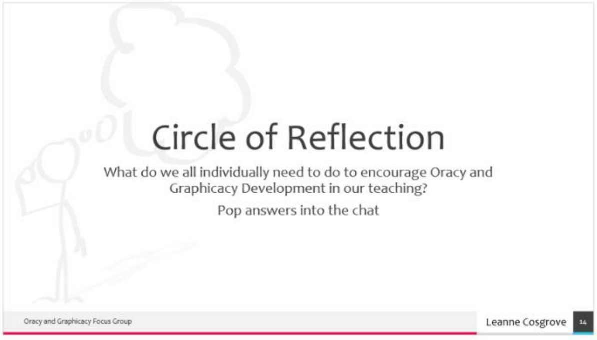





Training
Oracy and Graphicacy Focus Group
Leanne Cosgrove


Assessment
Oracy and Graphicacy Focus Group
Leanne Cosgrove


Additional Comments?
Oracy and Graphicacy Focus Group
Leanne Cosgrove


Circle of Reflection
What do we all individually need to do to encourage Oracy and Graphicacy Development in our teaching?
Pop answers into the chat
Oracy and Graphicacy Focus Group
Leanne Cosgrove


THANK YOU
Oracy and Graphicacy Focus Group
Leanne Cosgrove

Appendix 17: Oracy and Graphicacy Workshop Flyer

Free 3 Part Online Training Workshop Series

Tailored for Teachers of the Technical Subjects

Collaboratively Design Oracy and Graphicacy Frameworks

For Pre-Service Teachers, Lecturers, & School Placement Tutors

MAY 16, 2023
ORACY & GRAPHICACY
ONLINE WORKSHOP 1

This online workshop is the first in a three-part workshop series aimed at advancing participants' fundamental understanding of oracy and graphicacy and progressing to the application of these skills in the technical subject area.

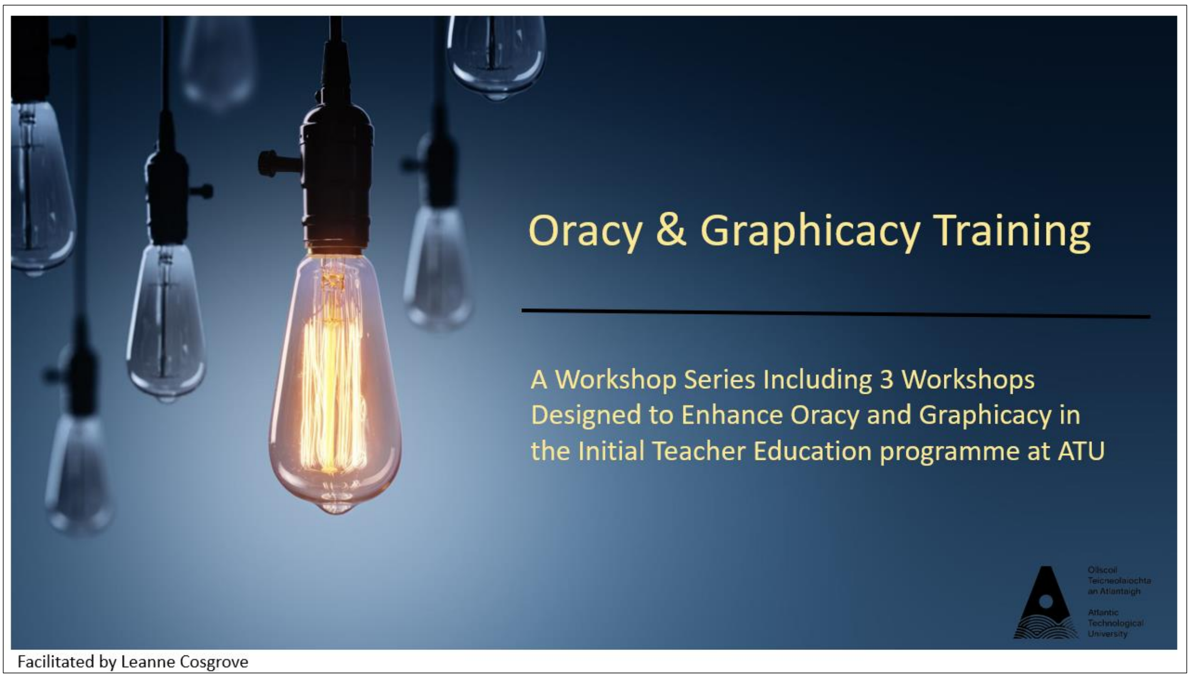
TO REGISTER:

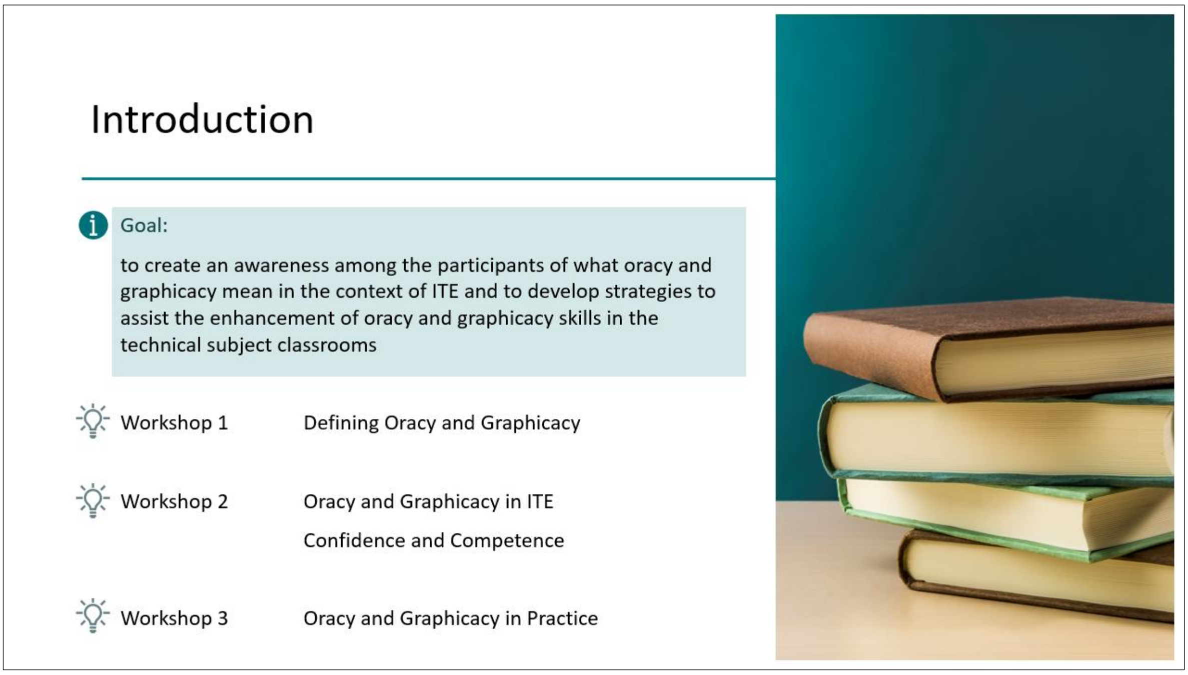
Click the link:
https://www.eventcreate.com/e/oracyandgraphicacyworkshop1
or
E-mail Leanne:
leanne.cosgrove@research.atu.ie

Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

Appendix 18: Oracy and Graphicacy Workshop Series Summary PowerPoint





Learning Outcomes

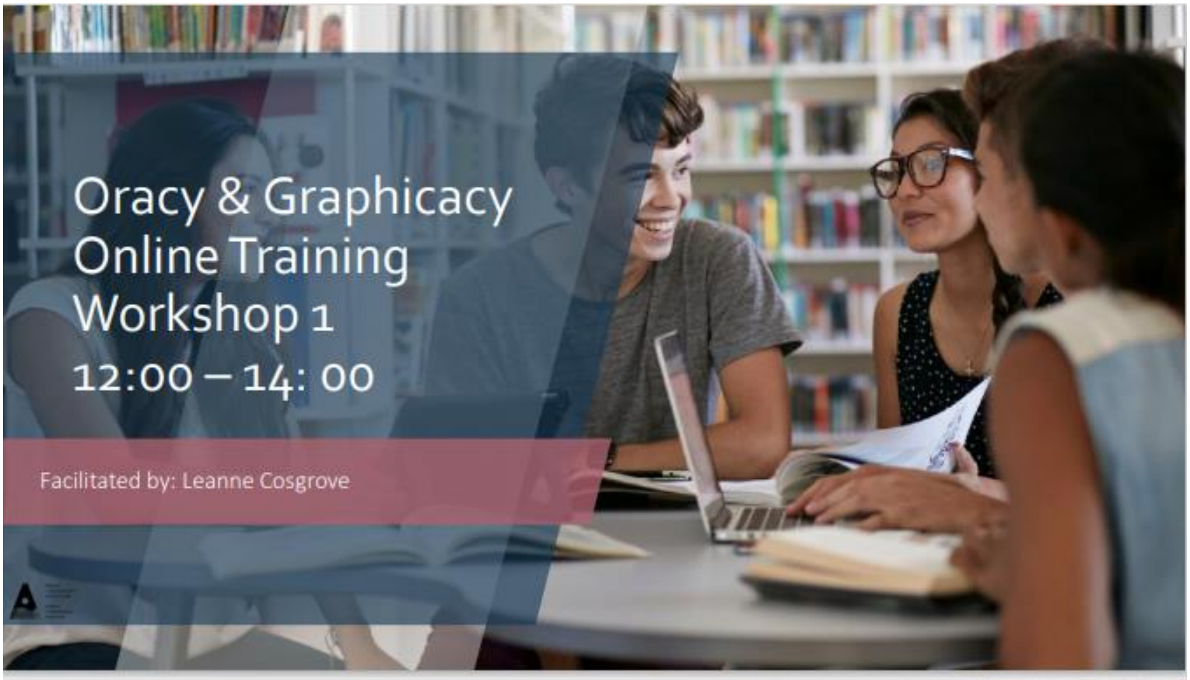
Workshop 1	**LO1**	Clarify the definitions of the term's oracy and graphicacy, relevant to modern-day society.
Workshop 2	**LO2**	Distinguish between oracy and graphicacy transversal and disciplinary oracy and graphicacy skills development, in the context of ITE and in the classroom.
	LO3	Differentiate between the development of personal oracy and graphicacy skills and the development of pedagogical knowledge of oracy and graphicacy teaching, on the ITE programme.
	LO4	Self-assess personal oracy and graphicacy skill abilities by means of an ITE oracy and graphicacy test, and on their previous definitions of the skills.
Workshop 3	**LO5**	Contribute to the creation of a framework or model that would help ITE staff and pre-service teachers develop oracy and graphicacy, specifically in the technical subjects.

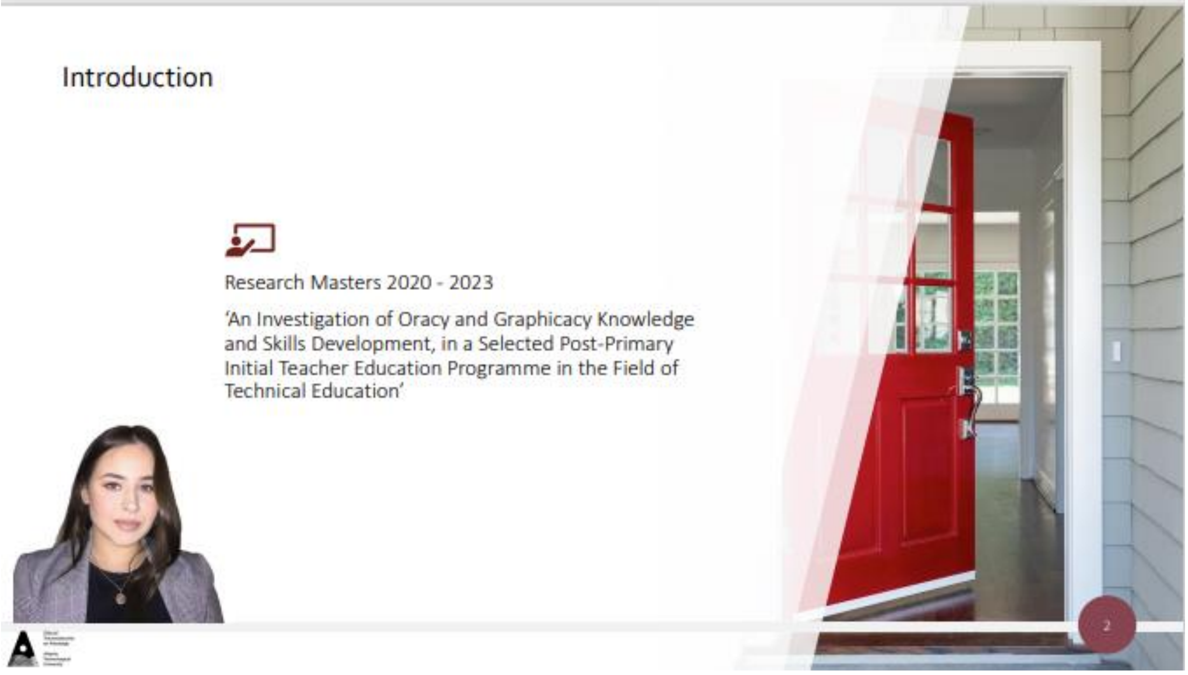
Teaching Approaches

Collaborative Learning & Problem-Based Learning

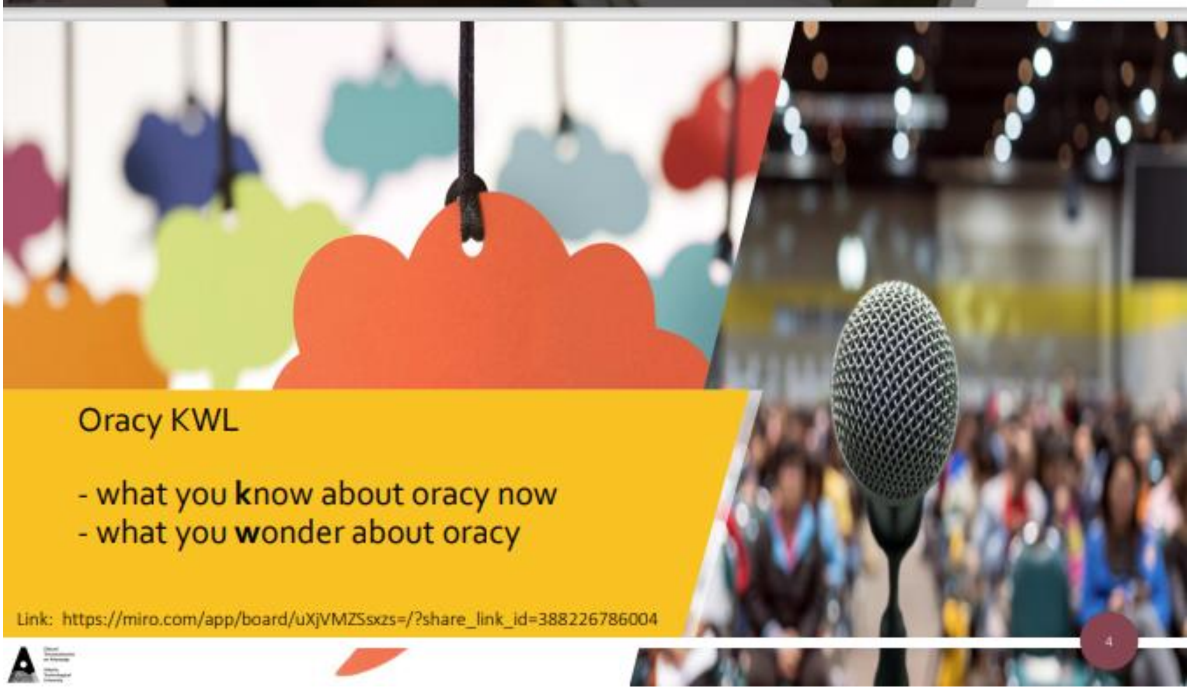
- Teamwork, Engagement
- Facilitator & Participant Input
- Constructivist – Jean Piaget
  Social Constructivist – Lev Vygotsky

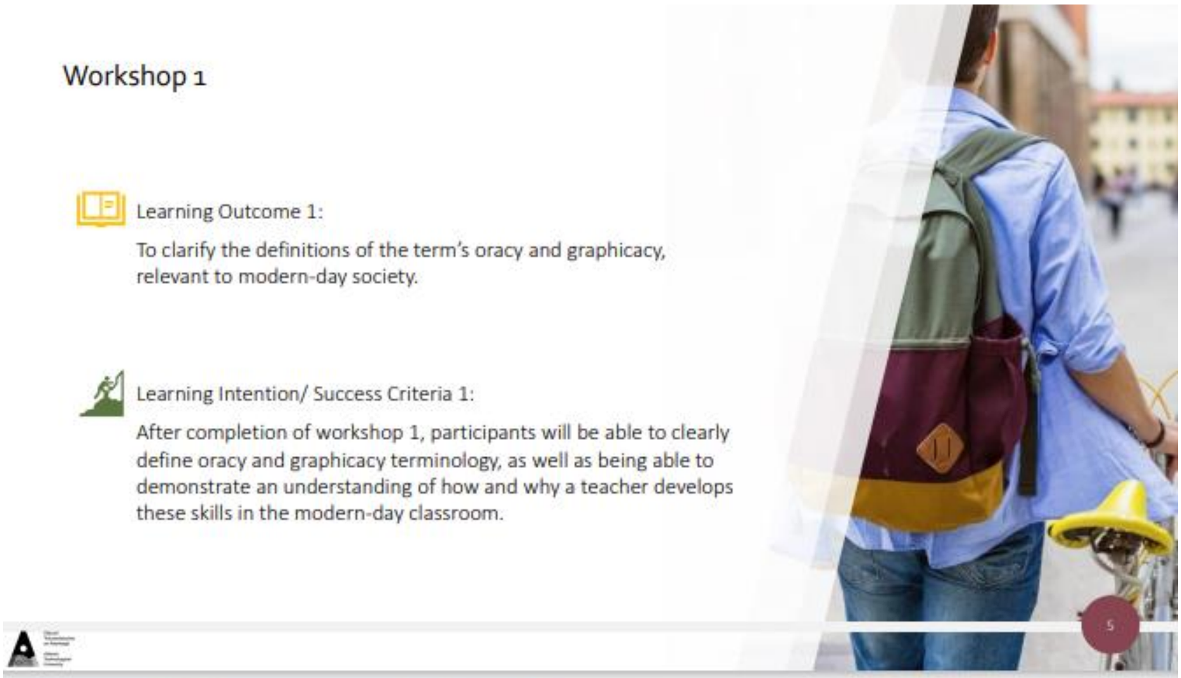
Appendix 19: Workshop 1 PowerPoint

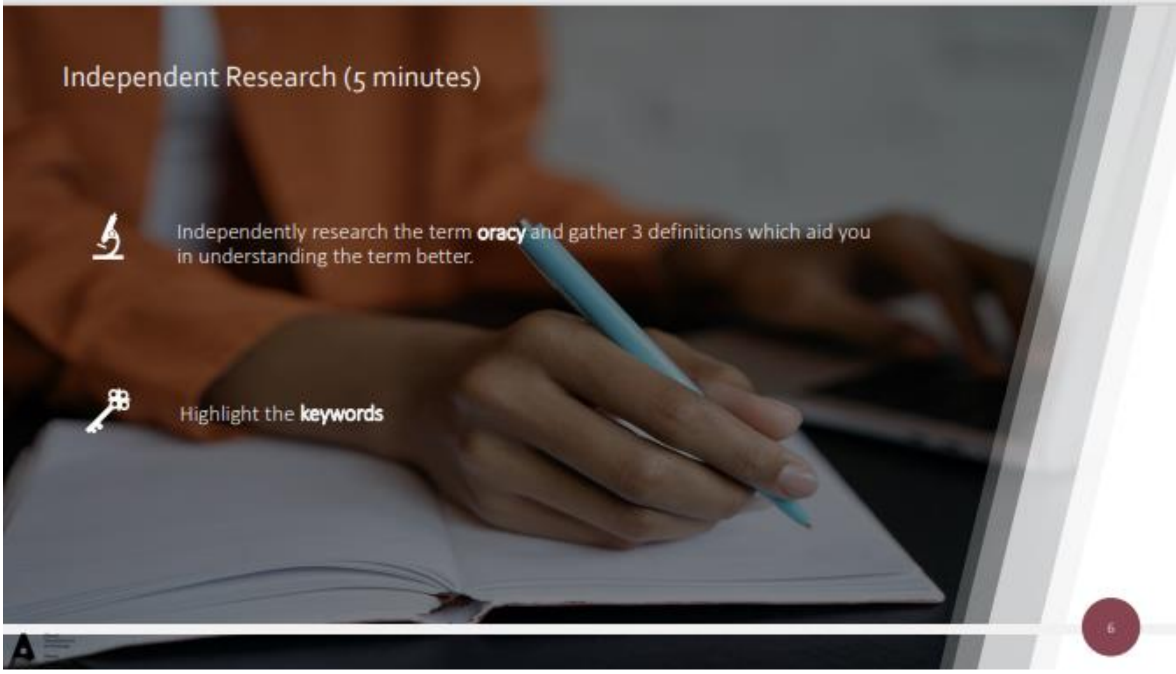





What is the aim of Workshop 1?
Workshop 1 aims to teach participants the fundamentals of oracy and graphicacy terminology while also helping them comprehend the definitions and origins of these terms.
A greater understanding of what both oracy and graphicacy encompass and contribute will allow participants to realize the importance and relevance of these skills both personally and professionally.
3


Oracy KWL
- what you **k**now about oracy now
- what you **w**onder about oracy
Link: https://miro.com/app/board/uXjVMZSsxzs=/?share_link_id=388226786004
4


Workshop 1
Learning Outcome 1:
To clarify the definitions of the term's oracy and graphicacy, relevant to modern-day society.
Learning Intention/ Success Criteria 1:
After completion of workshop 1, participants will be able to clearly define oracy and graphicacy terminology, as well as being able to demonstrate an understanding of how and why a teacher develops these skills in the modern-day classroom.
5


Independent Research (5 minutes)
Independently research the term **oracy** and gather 3 definitions which aid you in understanding the term better.
Highlight the **keywords**
6

Oracy Definition – Keywords

What	How	Why

Collaborative Group Work (10 minutes)
Defining Oracy in Groups

Max of 10 participants per group (mix of cohorts per group)

8-10 Breakout rooms

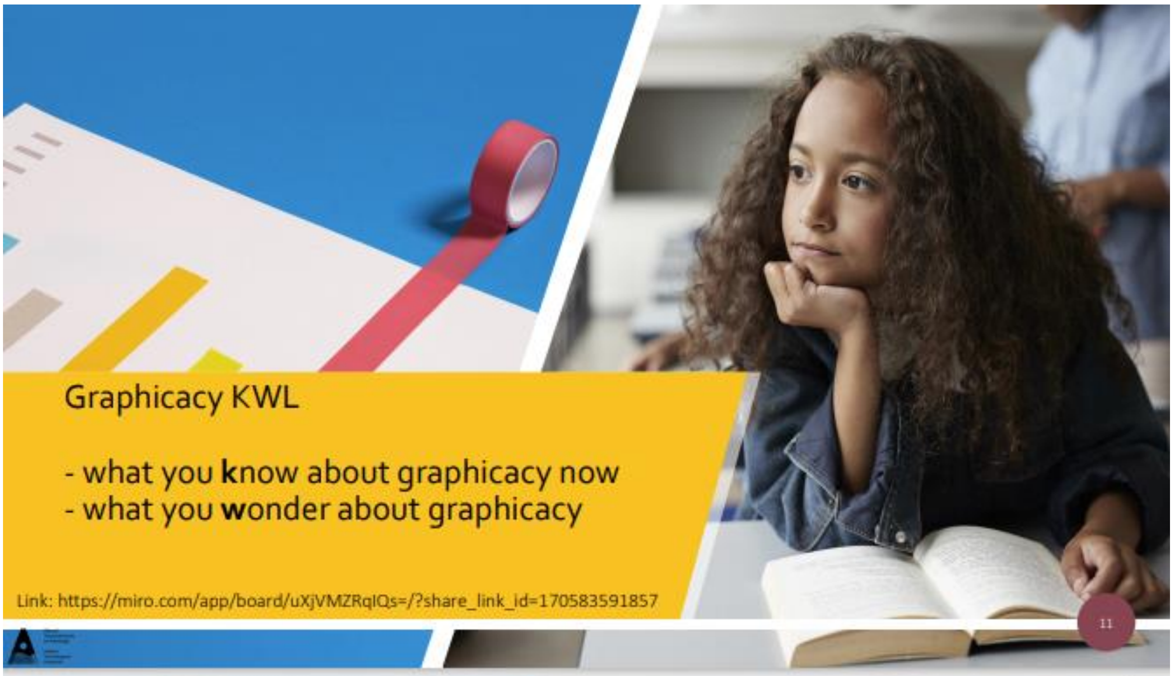
Group Leader Questions:

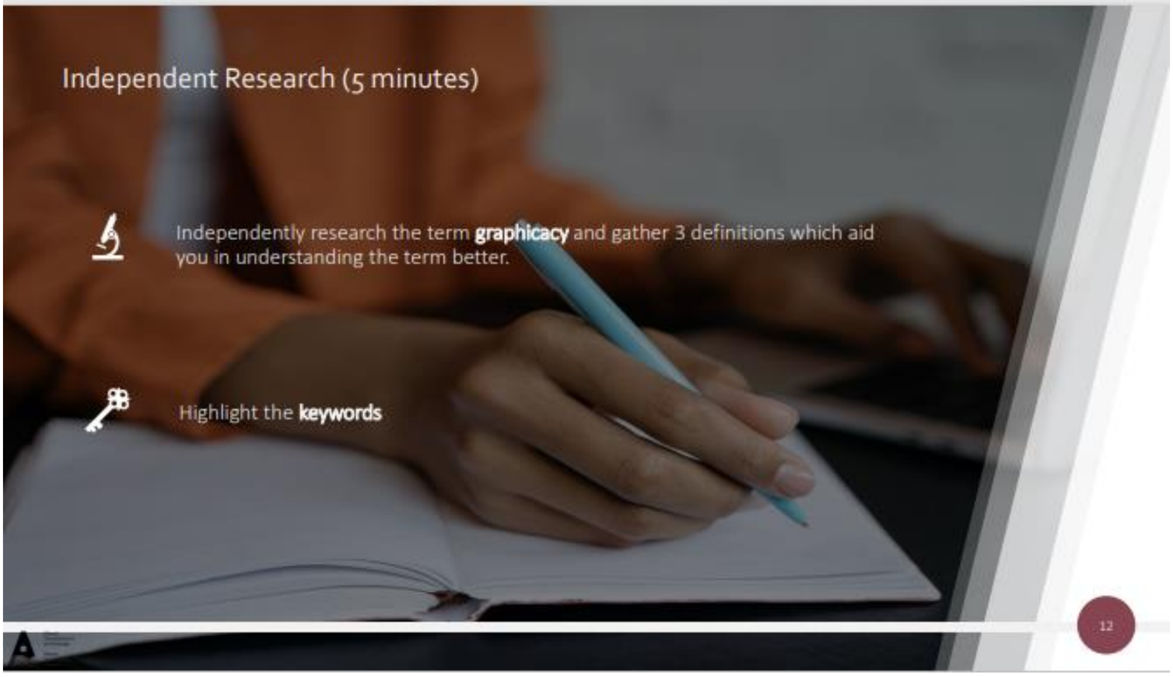
1. What is the first word that comes to mind when you think or hear the word oracy?
2. What verbs describe the actions that you are taking?
3. Why are you taking those actions?
4. How are you taking those actions? Through what mediums?

Using the questions create a group definition of oracy.

Group Oracy Definition ⟹ Workshop Oracy Definition

Group	Definitions	Workshop Definition
1		
2		
3		
4		
5		
6		
7		
8		
9		


Graphicacy KWL
- what you know about graphicacy now
- what you wonder about graphicacy
Link: https://miro.com/app/board/uXjVMZRqIQs=/?share_link_id=170583591857
11


Independent Research (5 minutes)
Independently research the term graphicacy and gather 3 definitions which aid you in understanding the term better.
Highlight the keywords
12

Graphicacy Definition – Keywords

What	How	Why

Collaborative Group Work (10 minutes)
Defining Graphicacy in Groups

Same groups as earlier – new leaders.

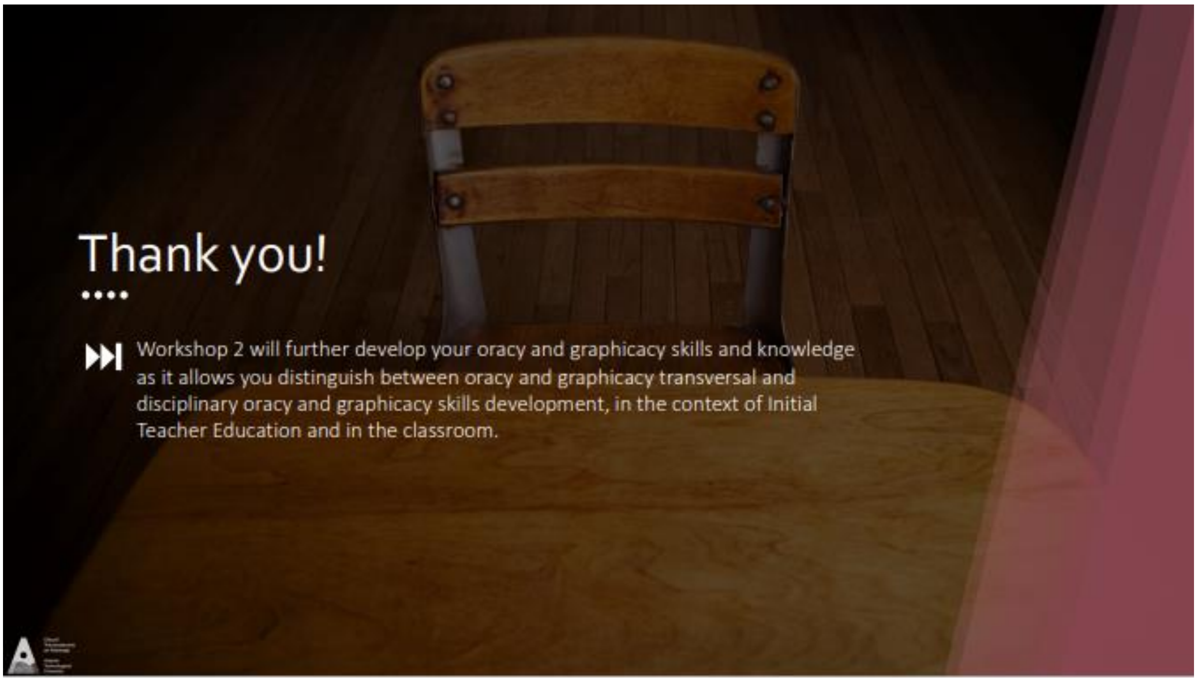
Group Leader Questions:

1. What is the first word that comes to mind when you think or hear the word graphicacy?
2. What verbs describe the actions that you are taking?
3. Why are you taking those actions?
4. How are you taking those actions? Through what mediums?

Using the questions create a group definition of graphicacy.

Group Graphicacy Definition ⟹ Workshop Graphicacy Definition

Group	Definitions	Workshop Definition
1		
2		
3		
4		
5		
6		
7		
8		
9		


Thank you!
Workshop 2 will further develop your oracy and graphicacy skills and knowledge as it allows you distinguish between oracy and graphicacy transversal and disciplinary oracy and graphicacy skills development, in the context of Initial Teacher Education and in the classroom.

Appendix 20: KWL Chart – Oracy

Appendix 21: KWL Chart – Graphicacy

Appendix 22: Workshop 2 Recap Quiz

LET'S RECAP...

Oracy and Graphicacy Workshop 2

Throughout the Oracy and Graphicacy Online Workshop 1, we created workshop definitions of both oracy and graphicacy by merging group definitions of each. Can you remember them?

* Required

* This form will record your name, please fill your name.

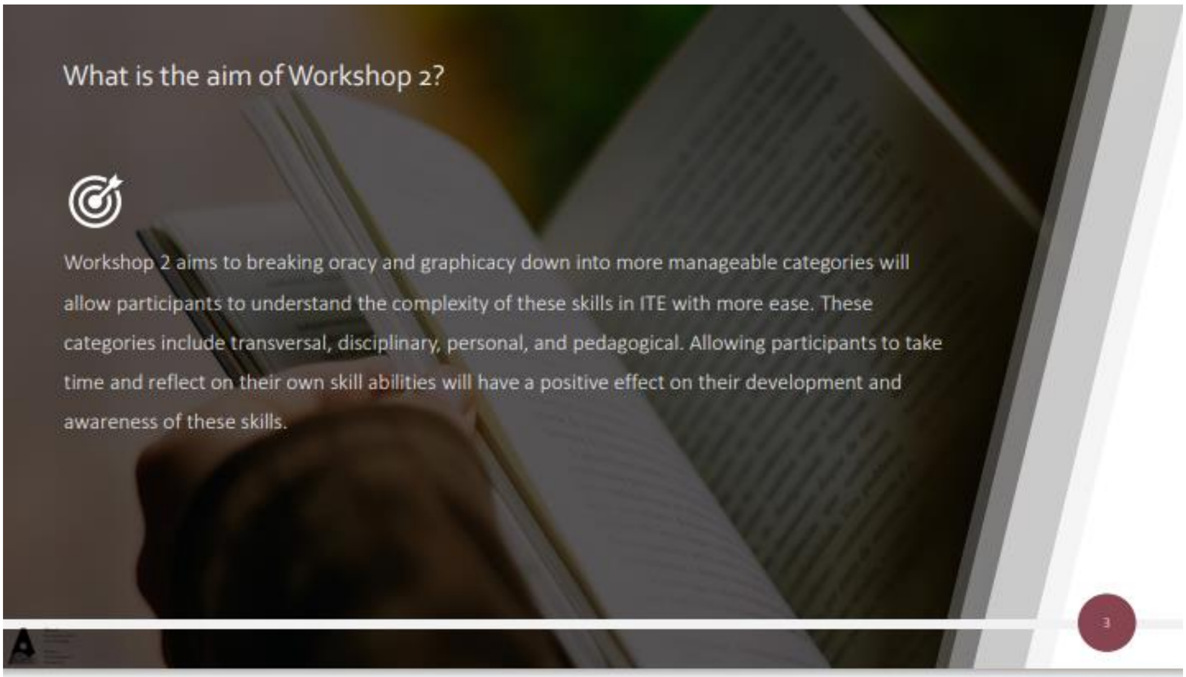
1. What was our final workshop definition of Oracy? * (10 Points)

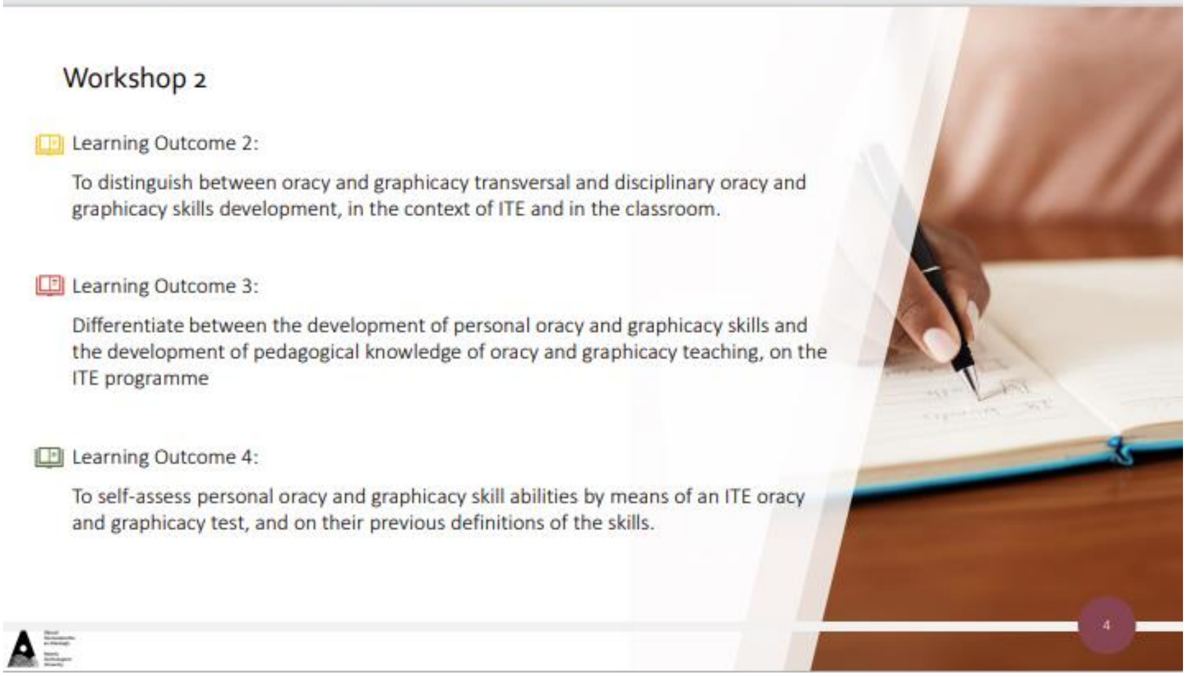
   Exact words and spelling matters.

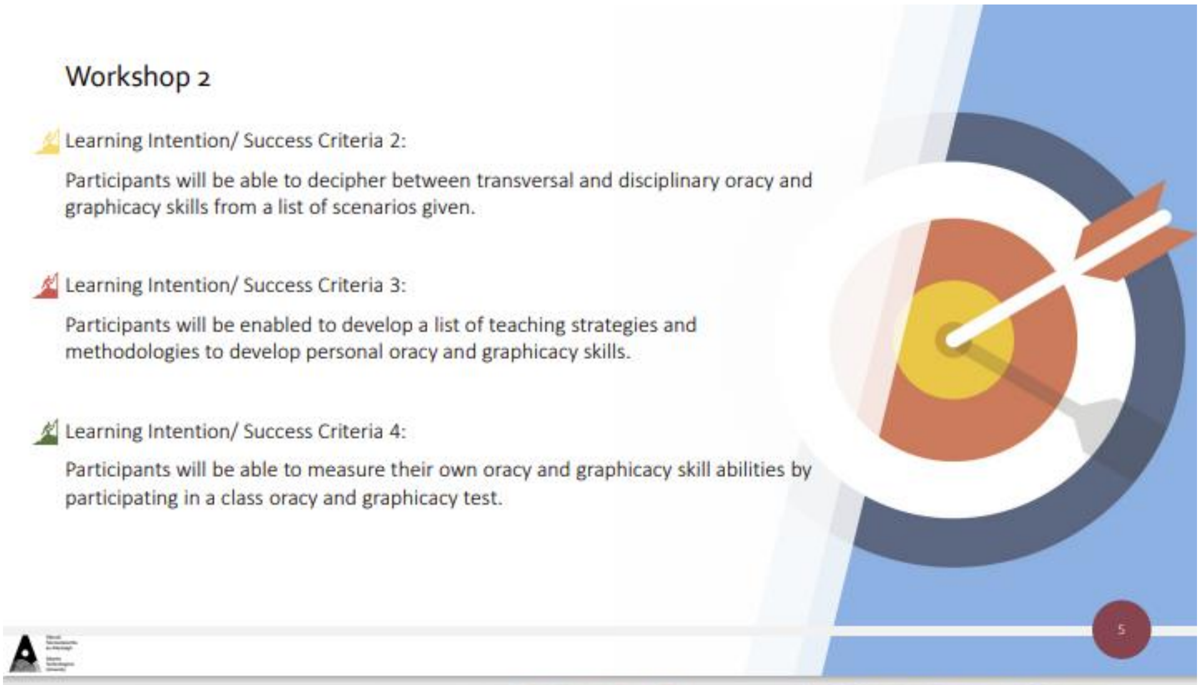
2. What was our final workshop definition of Graphicacy? * (10 Points)

   Exact words and spelling matters.

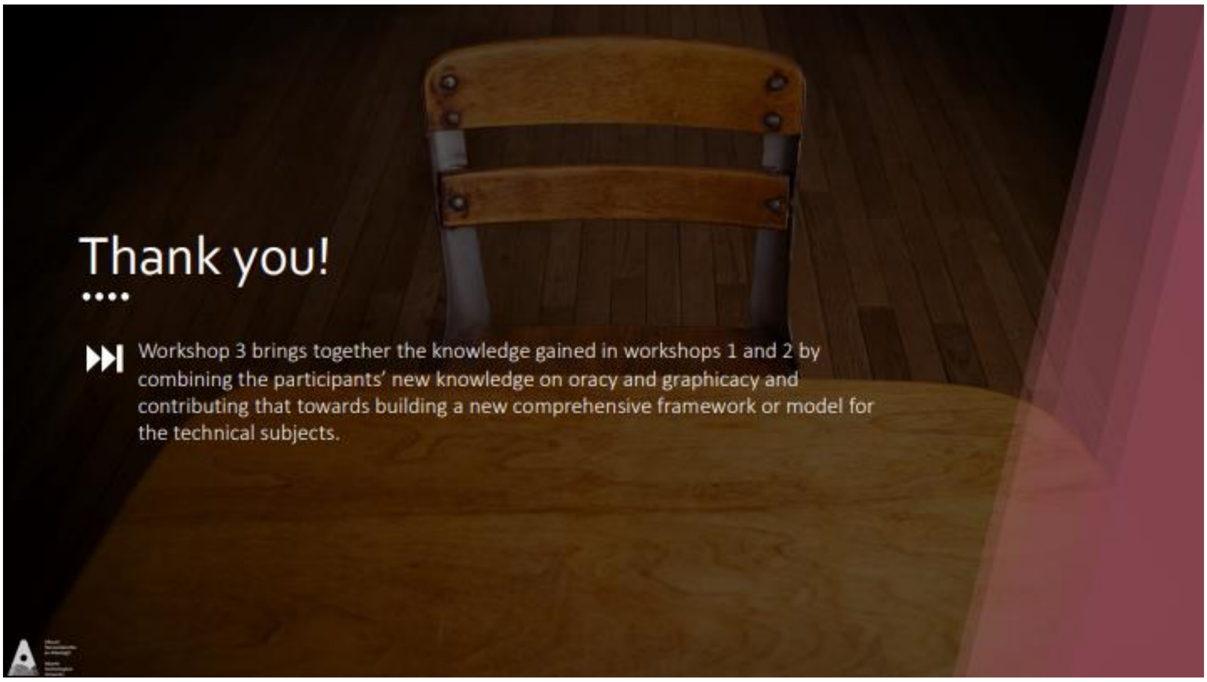
Appendix 23: Workshop 2 PowerPoint


What is the aim of Workshop 2?
Workshop 2 aims to breaking oracy and graphicacy down into more manageable categories will allow participants to understand the complexity of these skills in ITE with more ease. These categories include transversal, disciplinary, personal, and pedagogical. Allowing participants to take time and reflect on their own skill abilities will have a positive effect on their development and awareness of these skills.
3


Workshop 2
Learning Outcome 2:
To distinguish between oracy and graphicacy transversal and disciplinary oracy and graphicacy skills development, in the context of ITE and in the classroom.
Learning Outcome 3:
Differentiate between the development of personal oracy and graphicacy skills and the development of pedagogical knowledge of oracy and graphicacy teaching, on the ITE programme
Learning Outcome 4:
To self-assess personal oracy and graphicacy skill abilities by means of an ITE oracy and graphicacy test, and on their previous definitions of the skills.
4


Workshop 2
Learning Intention/ Success Criteria 2:
Participants will be able to decipher between transversal and disciplinary oracy and graphicacy skills from a list of scenarios given.
Learning Intention/ Success Criteria 3:
Participants will be enabled to develop a list of teaching strategies and methodologies to develop personal oracy and graphicacy skills.
Learning Intention/ Success Criteria 4:
Participants will be able to measure their own oracy and graphicacy skill abilities by participating in a class oracy and graphicacy test.
5


Screen Break 13:00 – 13:15
Turn off your camera and mute your microphone, do not leave the meeting during the break.
6


Thank you!
Workshop 3 brings together the knowledge gained in workshops 1 and 2 by combining the participants' new knowledge on oracy and graphicacy and contributing that towards building a new comprehensive framework or model for the technical subjects.

Appendix 24: Workshop 3 PowerPoint

Workshop 3

Learning Outcome 5:

To contribute to the creation of a framework or model that would help ITE staff and pre-service teachers develop oracy and graphicacy, specifically in the technical subjects.

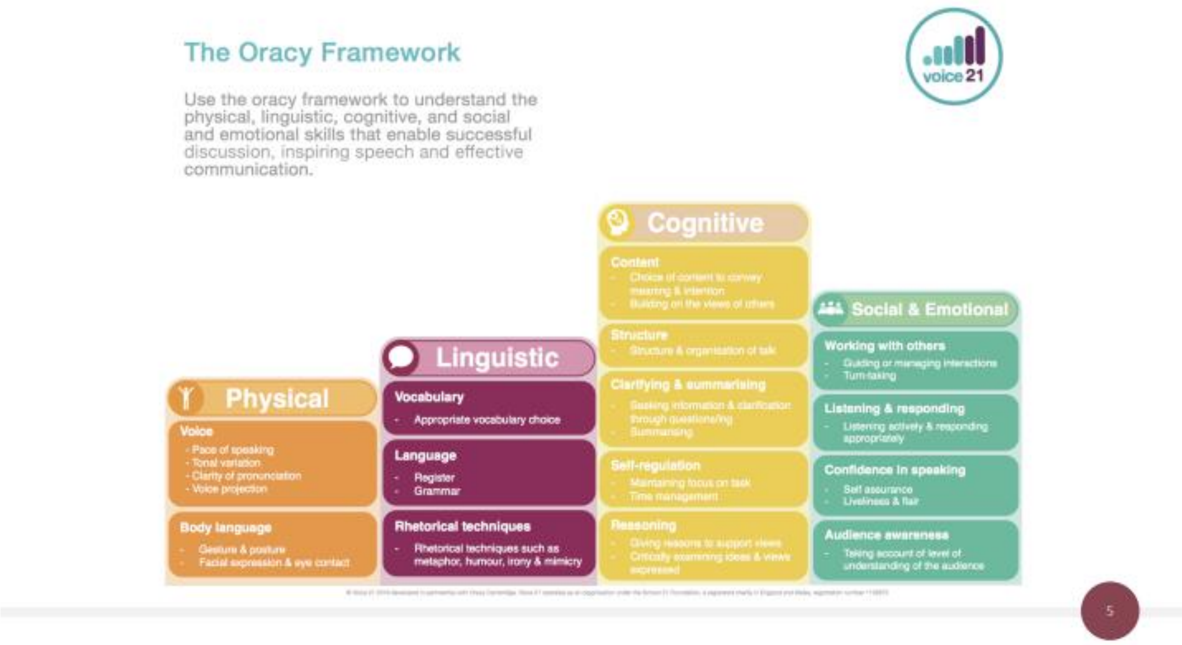
Learning Intention/ Success Criteria 5:

Participants will be able to create a framework or model for the development of oracy and graphicacy skills in the technical subjects.

3

Oracy Frameworks

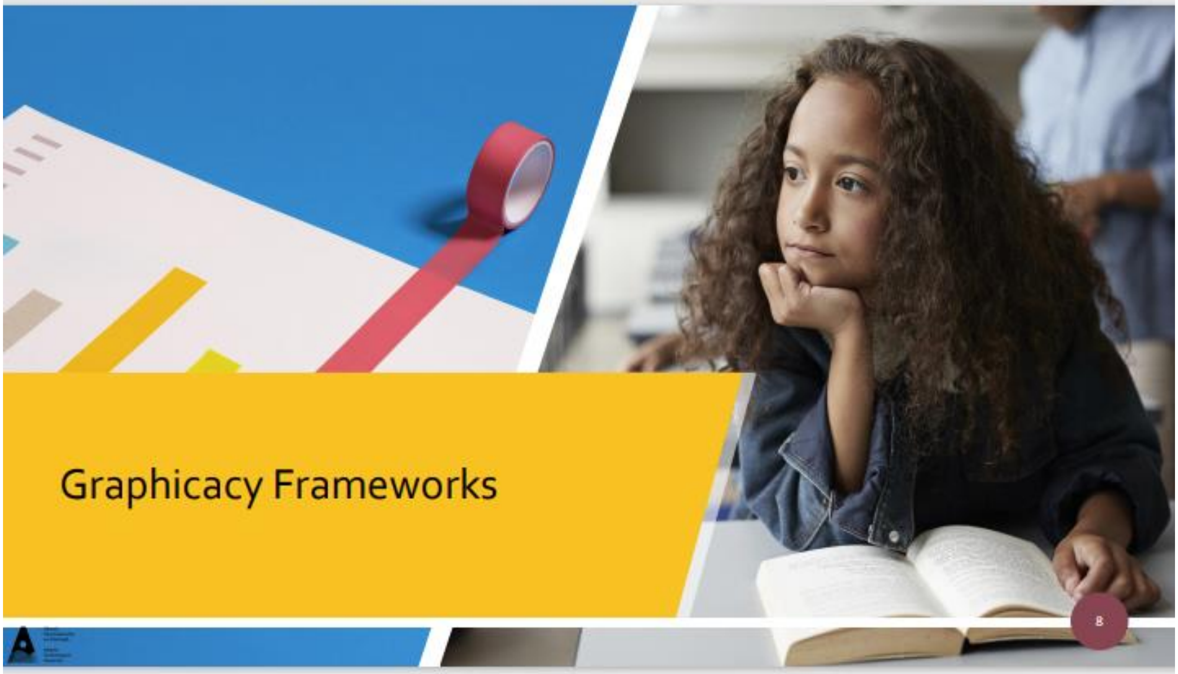
4

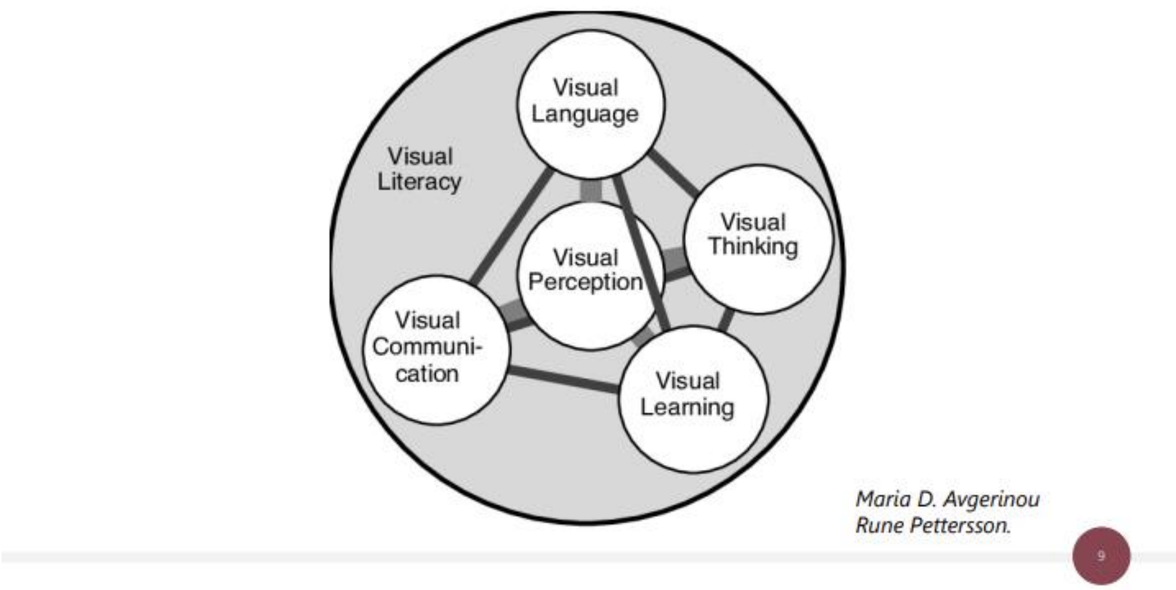


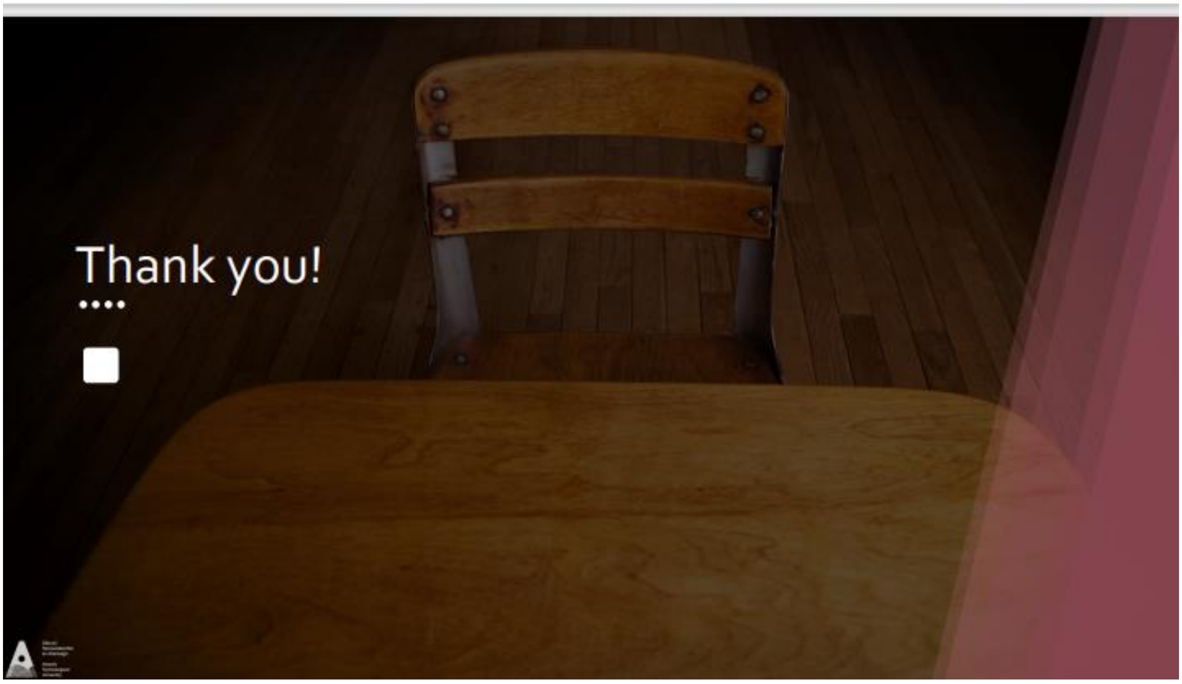
The Oracy Framework
voice 21
Use the oracy framework to understand the physical, linguistic, cognitive, and social and emotional skills that enable successful discussion, inspiring speech and effective communication.
Physical
Voice
- Pace of speaking
- Tonal variation
- Clarity of pronunciation
- Voice projection
Body language
- Gesture & posture
- Facial expression & eye contact
Linguistic
Vocabulary
- Appropriate vocabulary choice
Language
- Register
- Grammar
Rhetorical techniques
- Rhetorical techniques such as metaphor, humour, irony & mimicry
Cognitive
Content
- Choice of content to convey meaning & intention
- Building on the views of others
Structure
- Structure & organisation of talk
Clarifying & summarising
- Seeking information & clarification through questioning
- Summarising
Self-regulation
- Maintaining focus on task
- Time management
Reasoning
- Giving reasons to support views
- Critically examining ideas & views expressed
Social & Emotional
Working with others
- Guiding or managing interactions
- Turn-taking
Listening & responding
- Listening actively & responding appropriately
Confidence in speaking
- Self assurance
- Liveliness & flair
Audience awareness
- Taking account of level of understanding of the audience
5

Promote Auditory Memory
Develop Listening & Speaking Skills
Five Components of Effective Oral Language Instruction
Teach and Extend Vocabulary and Conceptual Knowledge
Teach a Variety of Spoken Texts
Create a Language Learning Environment
Adapted from Eisenhart C. 1990 2
PDST
6


Screen Break 13:00 – 13:15
Turn off your camera and mute your microphone, do not leave the meeting during the break.
7


Graphicacy Frameworks
8


Visual Literacy
Visual Language
Visual Thinking
Visual Perception
Visual Communi-cation
Visual Learning
Maria D. Avgerinou
Rune Pettersson.
9


Thank you!

Appendix 25: Workshop Feedback Form

Oracy and Graphicacy Workshop Series Feedback Form

* Required

1. Please agree/ disagree with the following statemets

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
The registration process was easy and handled efficiently	○	○	○	○	○
The number of participants were just right	○	○	○	○	○
Online delivery was the best mode of delivery for this workshop	○	○	○	○	○
The length of each individual workshop was just right	○	○	○	○	○
Three two-hour workshops was manageable	○	○	○	○	○
The workshop resources used and provided were appropriate and helpful	○	○	○	○	○

The facilitator was knowledgeable in the subject area	○	○	○	○	○
I believe the knowledge and skills gained from this workshop will benefit my teaching in the future	○	○	○	○	○

2. Any additional feedback or comments?

Enter your answer

3. Please rate this workshop *

☆ ☆ ☆ ☆ ☆

Submit