

PERFORMING SMALL PROJECT ASSESSMENT IN CIVIL TECHNOLOGY THROUGH HEUTAGOGY APPROACH TEACHING AND LEARNING PROCESS

Khojane Geoffrey Mokhothu

Central University of Technology, Free State (South Africa)

Abstract

A small project is one of the formal assessment tasks used in Civil Technology, along with preparing for the stage of the actual project that integrates theory and practical work. The aim of the study was to promote and assess the heutagogy approach in the teaching and learning process in Civil Technology small project assessment. While the main objective was to assess the impact of heutagogy as a teaching and learning approach to achieve a small project assessment in Civil Technology. Moreover, the proposition of the study was that the degree of teaching and learning freedom in Civil Technology promulgates creativity, innovation, critical thinking, and problem-solving application. The study used a mixed-method approach consisting of a questionnaire and a semi-structured interview to gather data. The participants of the study were Civil Technology students, both males and females, from different cultural groups enrolled at one of the Universities of Technology in South Africa. Additionally, the study occurred between the 2020 and 2021 academic years, while the teaching and learning process was more hybrid (online for theory, face-to-face for practical work and verbal presentation). According to the findings obtained by the study, it was determined that the proposition and objectives of the study were positive. However, close monitoring and supervision by the lecturer on integrating theory and practical work should be more active and proactive in the heutagogy approach of teaching and learning.

Keywords: *Small project, heutagogy, Civil Technology, theory and practical work.*

1. Introduction

The integration of theory and practical work is a critical platform to discharge the effective teaching and learning process in the Civil Technology subject. Assessments in Civil Technology are conducted in several ways, such as theory, investigation, simulation, and all levels of practical work, which are small project and practical assessment task (DBE 2014). Therefore, this research explores the performance of small task through a heutagogical approach.

2. The Conceptualisation of the study

2.1. Heutagogy approach

"Teach how to think not what to think" (Margaret-Mead, nd). Heutagogy is an approach of self-determined learning and brings together some of the principles provided by these numerous approaches to learning (Kenyon and Hase, 2001). This is also an effort to question certain notions about teaching and learning that still dominate in teacher-centered learning, in particular the necessity of, as Bill Ford (1997) persuasively puts it, "knowledge sharing" rather than "knowledge hoarding" (Kenyon and Hase, 2001: 3). Furthermore, heutagogical approach acknowledges the need for flexibility in learning, in which the teacher gives resources, but the learner designs the actual course of action by negotiating the learning. As a result, students may read around crucial problems or concerns to establish what is of interest and relevance to them, and then negotiate more reading and assessment activities. In the latter case, assessment becomes more of a learning experience than a technique for measuring achievement. (Hase & Kenyon, 2000; Nikolovska, Grizev & Iliev, 2019: 148).

2.2. Small project

Small project It is an actual project in a small-scale model or doing any part of an actual project that is regarded as most challenging to provide students with first-hand practise and technique development. Moreover, Ntshaba (2012: 4) stressed the importance of small projects as an element of summative assessment for student competency maintenance (DoE, Curriculum and Assessment Policy Statement, 2014: 30; Ntshaba, 2012: 4). In addition, Ntshaba (2012: 4) views modest projects as allowing students to participate in design activities and understand how internal limitations and processes affect designs (DoE, 2014; Sonar, 2021: 1).

2.3. Civil Technology as a subject

Civil technology is concerned with the concepts and principles of the built environment, as well as the technical process (DoE, 2014: 9). It includes the application of scientific principles as well as practical skills. The subject strives to construct and improve the built environment to improve the individual and societal quality of life while also ensuring the sustainable use of the natural environment. Civil Services, Construction, and Woodworking are the three core areas of study (DoE, 2014: 9; DoE, 2014: 11; Maeko, 2016; Mokhothu, 2020; Mtshali, 2020).

3. The aim of the study

The aim of the study was to promote and assess the heutagogy approach in the teaching and learning process in Civil Technology small project assessment.

4. The objective of the study

The main objective was to assess the impact of heutagogy as a teaching and learning approach to achieve a small project assessment in Civil Technology.

5. Proposition of the study

The proposition of the study was that the degree of teaching and learning freedom in Civil Technology promulgates creativity, innovation, critical thinking, and problem-solving application.

6. Methodology

6.1. Context of the study

Theory class between lecturer and Civil Technology BEd (SP and FET) was conducted online via one of the recommended platforms by the university. While practical class were conducted face-to-face in the university Civil Technology workshop also at home for practical work (doing). The assessment small project was presented and discussed in class, consequently, was administered as individual task.

6.2. Participants

The participants of the study were Civil Technology students (N=64), both males (n=38) 59,4% and females (n=26) 40.6%, from different cultural groups enrolled at one of the universities of Technology in South Africa.

6.3. Measures

An individual assessment for the theory preparation report was provided to the student for conducting research on why reinforcing foundations or floor meshing is necessary (stage 1). At stage 2, students were ordered to design reinforced foundations or meshed floors according to the research they conducted. At Stage 3 of the individual assessment, students performed practical work, making a small project of a reinforced foundation or mesh floor. Therefore, during the submission date of the full assessment, "surprise" verbal assessment was introduced as stage 4; in a form of an open interview, all questions and answers were based on the individual's work one-on-one.

7. Results and discussions

Four tables below present the results of all four stages of assessment:

Table 1. Research assessment.

Stage 1	N	High score (%)	Lower score (%)	Average (%)
S 1	64	100%	55%	87.5%

Table 2. Design assessment.

Stage 2	N	High score (%)	Lower score (%)	Average (%)
S 2	64	100%	50%	82.8%

Table 3. Practical work assessment.

Stage 3	N	High score (%)	Lower score (%)	Average (%)
S 3	64	75%	50%	72%

Table 4. Verbal assessment.

Stage 4	N	High score (%)	Lower score (%)	Average (%)
S 4	64	65%	50%	66%

All three tables above, indicates the results from stage 1 to stage 4 of the assessments. Table 1 shows that all students managed to pass with the average of 87.5% and the score marks ranging between 100% highest and 55% lowest. In table 2 results indicate that students managed to pass with the average of 82.8% where the highest score was 100% and the lowest was 50%. While table 3 the results indicates that student achieved the average of 72% in the highest score of 75% and lowest of 50%. Table 4 indicated that all student managed to pass with the average of 66% the highest score was 65% and the lowest was 50%. All the results above managed to articulate that students managed to pass on their own freedom of space learning with less directives lecturer's but only instructions. Therefore, the results concur with Kenyon and Hase, (2001:3) heutagogical approach acknowledges the need for flexibility in learning, in which the teacher gives resources, but the learner designs the actual course of action by negotiating the learning.

8. Conclusion

According to the findings obtained by the study, it was determined that the proposition and objectives of the study were positive. However, close monitoring and supervision by the lecturer on integrating theory and practical work should be more active and proactive in the heutagogy approach of teaching and learning.

References

- Department of Basic Education. [DoE] (2014). *Curriculum and Assessment Policy Statement*. Pretoria: Department of Education.
- Department of Basic Education. [DBE] (2014). *Civil Technology Guidelines for Practical Assessment*. Pretoria: Department of Education.
- Department of Education. [DoE] (2014, July 18). *Government Gazette – Republic of South Africa* (Vol. 589 No. 37840). Pretoria: Department of Education. <http://www.saflii.org/za/gaz/ZAGovGaz/2014/677.pdf>
- Hase, S., & Kenyon, C. (2000). From Andragogy to Heutagogy. In *ultiBASE In-Site, December 2000*. Melbourne: Royal Melbourne Institute of Technology.

- Kenyon, C., & Hase, S. (2001). Moving from Andragogy to Heutagogy in Vocational Education. In *Research to Reality: Putting VET Research To Work. Proceedings of the Australian Vocational Education and Training Research Association (AVETRA) Conference* (4th, Adelaide, Australia, March 28-30, 2001).
- Maeko, S. (2016). *Investigating the instructional practices of the practical component of Civil Technology for lecturer training in selected South African Institutions of Higher Learning* [Doctoral dissertation: Tshwane University of Technology, Pretoria, South Africa].
- Mokhothu, K. G. (2020). Investigating the impact of learn by doing in Civil Technology class: Students Action. In C. Mafalda (Ed.), *Proceedings of 8th International Conference on Education and New Developments (END)* (pp. 164-167). ISBN: 978-989-54816-2-1
- Mtshali, T. I. (2020). Critical thinking skills for Civil Technology practical assessment task (PATs). *World Transactions on Engineering and Technology Education*, 18(2), 237-241.
- Margaret-Mead. C. (nd). Building your Child's Critical Thinking skill. <https://rancholabs.medium.com/teaching-children-how-to-think-and-not-what-to-think-9ce6c8e33f51>
- Nikolovska, A, Grizev, A., & Iliev, A. (2019). History of Heutagogy as a Self-determined Learning. 2nd International Scientific Conference MILCON'9, Skopje (pp.147-153). ISBN: 978-9989-134-10-4
- Ntshaba, L. P. (2012). *A study of Technology Education Instructional Practices in Grade nine Classrooms: A Case Study of Three Senior Secondary Schools in the King William's Town District* [Master's thesis: University of Fort Hare, Alice, South Africa].