The Implications of Assessment Based on Contextual Learning on Students' Results

Carmen Maria Țîru

The Implications of Assessment Based on Contextual Learning on Students' Results

Carmen Maria Țîru [a*] 🆔

ª West University of Timişoara, Teacher Training Department, Timişoara, Romania

Corresponding author: carmen.tiru@e-uvt.ro

Abstract	

Keywords:
learning context, assessment for learning, assessment based on contextual learning

Creating contexts in teaching, learning, and assessing the student involves a complex activity whose purpose is the student's progress. The connection between the three processes can be assured by choosing the best educational context for the university teacher. In the student-centered university educational process, having the students as partners in the teaching process and assessing them based on contextual learning is essential. This study analyses the influence of assessment based on contextual learning on students' learning results and used descriptive and comparative quantitative research with a non-experimental design to achieve this goal. The sample was 114 students from the Teacher Training Department, West University of Timisoara, Romania, second year of study, Level 1 of the Postgraduate Program, for the academic year 2021–2022 (20 males and 94 females). Using two formative context-based assessment tasks and one summative content-based assessment task, the study revealed that assessments based on practical contextual learning tasks positively impact students' results more than content-based assessments. Also, the contextual assessment task type influences students' results, with the practical context determining better results than a cognitive-theoretical context. The study's limitations suggested that many factors could be involved in studying the impact of different types of contextual assessment on students' results. Future experimental research could be done on considering experimentally confirmed variables and criteria for construing and choosing the appropriate type of task for formative and summative contextual assessment that confirms students' progress, including new technologies support in contextual assessment.

Zusammenfasung	

Schlüsselworte:
Lernkontext, Beurteilung des Lernens, Beurteilung basierend auf kontextuellem Lernen

Das Erstellen von Kontexten beim Lehren, Lernen und Beurteilen des Schülers ist eine komplexe Aktivität, deren Zweck der Fortschritt des Schülers ist. Die Verbindung zwischen den drei Prozessen kann durch die Wahl des besten Bildungskontexts für den Hochschullehrer sichergestellt werden. Im studierendenzentrierten universitären Bildungsprozess ist es unerlässlich, die Studierenden als Partner im Lehrprozess zu haben und sie auf der Grundlage kontextuellen Lernens zu bewerten. Diese Studie analysiert den Einfluss einer auf kontextuellem Lernen basierenden Bewertung auf die Lernergebnisse der Schüler und nutzte deskriptive und vergleichende quantitative Forschung mit einem nicht-experimentellen Design, um dieses Ziel zu erreichen. Die Stichprobe bestand aus 114 Studierenden der Lehrerausbildungsabteilung der West-Universität Timisoara, Rumänien, zweites Studienjahr, Stufe 1 des Postgraduiertenprogramms, für das akademische Jahr 2021–2022 (20 Männer und 94 Frauen). Anhand von zwei formativen kontextbasierten Bewertungsaufgaben und einer summativen inhaltsbasierten Bewertungsaufgabe zeigte die Studie, dass Bewertungen, die auf praktischen kontextbezogenen Lernaufgaben basieren, die Ergebnisse der Schüler stärker positiv beeinflussen als inhaltsbasierte Bewertungen. Auch der Aufgabentyp der kontextuellen Bewertung beeinflusst die Ergebnisse der Studierenden, wobei der praktische Kontext bessere Ergebnisse bestimmt als ein kognitiv-theoretischer Kontext. Die Einschränkungen der Studie ließen darauf schließen, dass viele Faktoren bei der Untersuchung der Auswirkungen verschiedener Arten der kontextuellen Bewertung auf die Ergebnisse der Studierenden eine Rolle spielen könnten. Zukünftige experimentelle Forschung könnte durchgeführt werden, um experimentell bestätigte Variablen und Kriterien für die Konstruktion und Auswahl des geeigneten Aufgabentyps für die formative und summative Kontextbewertung zu berücksichtigen, die den Fortschritt der Schüler bestätigt, einschließlich der Unterstützung neuer Technologien bei der Kontextbewertung.

1. Introduction

Students are active partners who stand to gain or lose from how the training process is organized and implemented (Attard et al., 2010). So, the student becomes a co-participant in the didactic process and one of the poles of its success. Stensaker (2008) argued that to achieve quality teaching and learning, the didactic process must be placed beyond technical definitions and procedures, with attention paid to good teaching and learning practices. These characteristics have given rise to learning approaches that use learning strategies suggested by experiential learning theories (Crosling et al., 2009). Teaching strategies such as problem-based, project-based, case studies, and discovery learning are at least equal but generally

much more effective than traditional deductive methods (Prince & Felder, 2006). These teaching strategies promote collaboration among students to solve problems by using real-life problems or specific learning situations, ensuring a deeper understanding of the relationship between theory and practice (Tight, 2002). It is about context-based learning or learning in a classroom context for learning. Teaching and learning based on such experiences automatically also requires assessment for learning. According to the constructivist curriculum alignment, assessment at the academic level involves assessing students' skills (Biggs & Tang, 2011). In this respect, assessment should focus predominantly on authenticity and complexity, not replicating or measuring outcomes.

2. Theoretical foundation

2.1. Contextual teaching and learning in the university educational process.

The educational process must be oriented toward the constructivist approach to involve the students in the didactic process actively. This approach starts from the design, continues with the implementation of teaching and learning, and ends with the assessment processes. Hirumi (2002) presents the characteristics of this approach that teachers can use in educational practice: offers experiences, together with the transmission of knowledge; presents several perspectives; experiences learning in authentic contexts; encourages points of personal view; introduces learning into a social experience; and uses multiple modes of representation, reflection, and self-awareness in the process of knowledge accumulation.

In the traditional curriculum approach, the student is not invited to use the experiences acquired in different contexts in which he was engaged, and the teacher needs to build educational contexts, even in collaboration with the students. A possible model for ensuring the theory-practice link in the university didactic process is context-based learning. The context makes sense of an experience, distinguishing between what is relevant and irrelevant (Open University, 2015). The success lies not only in the theoretical contribution of knowledge but also in the possibility of using the assimilated knowledge in professional educational contexts and other contexts. This type of learning emphasizes context's role in ensuring effective learning. Thus, students develop their skills using different concepts and activities depending on their contexts and situations (Parchmann et al., 2007). The contextual teaching and learning (CTL) approach makes it possible for teachers to create educational

contexts that connect their students with real or professional life, cultural, and social environments and invite them to make connections between knowledge of learning and the contexts in which the content will be used (Hudson & Whisler, 2001; Lotulung et al., 2018; Putnam & Leach, 2005).

Unlike traditional approaches, which start with scientific ideas that lead to applications, the practice is the starting point for developing the student's scientific ideas in contextual teaching and learning. Contextual learning ensures that students learn and understand new knowledge through their experiences. Action-based instructional strategies need to be self-sufficient in pushing students toward higher-order thinking. Contextual Teaching and Learning (CTL) has effects on students' specific skills at the university level and improves students' recount writing skills (Madjid et al., 2017; Satriani et al., 2012), students' speaking skills (Suadiyatno et al., 2020), students' learning achievement in Civics (Rahayu, 2015), understanding of knowledge of learning modules (Dewi & Primayana, 2019), communication and critical thinking (Sung et al., 2015). While Yeni et al. (2019) concluded that no significant interaction exists between the CTL approach and students' motivation for learning, Suparman et al. (2013) pointed out that it can increase university students' motivation for learning. Using the CTL strategy can also increase the achievement of learning outcomes for university students (Rahayu, 2015; Sung et al., 2015).

2.2. Assessment based on contextual learning - an assessment for learning

In university educational contexts with many students, the existence of shared assessment practices with high reliability is required in such a way as to ensure fairness, avoid tensions between students, and avoid imbalances in terms of the difficulty of the tasks studied and those examined (Broadbent et al., 2018). These aim to facilitate the teacher's understanding and monitoring of the student's capabilities (Alahmadi et al., 2019). It is an assessment for learning (AfL) and not for a hierarchy of students' results.

In AfL, it is essential to ensure ways to influence the improvement of a student's academic achievements, interest in learning, responsiveness, and responsibility (Panikarova et al., 2021). The teaching and learning contexts are essential in determining whether students gain such characteristics but need improvement. Also, an authentic assessment process, such as an oriented assessment, sustains the students' attendance of the proposed competencies. It is an

assessment that creates authentic assessment tasks, balancing summative and formative assessment (Baird et al., 2017) and assuring practice opportunities (Sambell et al., 2013). It is essential to prepare assessment tasks that stimulate learning and involve students actively in the assessment process using specific assessment criteria to analyze their personal and peers' performance and to give and receive feedback to support current and future learning processes to ensure such an assessment (Carless, 2007).

In higher education, rather than simply reproducing facts, students are encouraged to apply, evaluate, and create knowledge and practices that lead to higher-order cognitive skills (Meir et al., 2019). Thus, thinking and implementing the best assessment methods that measure complex skills is necessary, ensuring added value to the educational process. In such assessment contexts, the students can practice and develop new scientific knowledge and skills and learn collaboratively (Knight & Yorke, 2003).

Only a few authors studied the impact of AfL on university students' achievements. It was demonstrated a medium to large effect sizes of increased achievement after using Afl (Glasson, 2008; Stiggins, 2006). Meanwhile, some authors mentioned the difficulty of establishing improvement in students' achievement because of a lack of a specific definition of AfL (Baird et al., 2017) and challenges in the fidelity of its implementation and measurement (Shute et al., 2008; Umar & Majeed, 2018). In this respect, a definitive statement on AfL strategies should be made (Carless, 2017) and used more frequently in academic assessment practices.

Assessment based on contextual learning is an assessment for learning. A lot of studies, especially in the exact disciplines, at high school level and college have analyzed concrete ways of implementing contextual assessment and their impact on student acquisitions (Avargil & Herscovitz, 2012; Taasoobshirazi & Carr, 2008). Very few researchers investigated the impact of an assessment based on contextual learning on students' university-level results, especially in the field of exact sciences. For example, Sevian et al. (2023) analyzed how different contexts used in courses influence student outcomes in chemistry classes. Bortnik et al. (2021) used context-based testing in chemistry learning at the university level. Williams (2008) proposed technology-supported tools and techniques to assess context-based learning. In this context, this research is opportune to complete this lack of investigating the effect of assessment based on contextual learning on students' learning.

3. Research methodology

This study analyses the influence of assessment based on contextual learning on students' learning results. Descriptive and correlational quantitative research with a non-experimental design was conducted to achieve the intended goal. This type of design was necessary because of the specificity of research actions, which will be described in the following.

The research sample was 114 students (20 males and 94 females) from the Teacher Training Department, West University of Timișoara, Romania, in the second year of study, Pedagogy II discipline, Level 1 of the Postgraduate Program, for the academic year 2021–2022. It was not a statistically randomized sample, the author being the seminar activity responsible of the Pedagogy II discipline. According to the confidentiality ethic, the student's grades were protected, and this study presents only the obtained mean of the students' grades, for each task.

The rationale of this research was that in the seminary activities of Pedagogy II discipline were used Contextual Teaching and Learning principles and methods. More punctually, for each seminar, the teacher developed specific contexts for learning, using worksheets that describe each seminary task related to each Course activity and to the discipline competencies. Concerning Klassen's (2006) proposal, which mentioned different types of contextual assessment using cognitive and practical contexts, each worksheet used types of previously mentioned teaching and learning contexts. Also, using the formative assessment, two context-based assessment tasks were an integral part of the CTL activities (the formative assessment instruments- At1 and At2 described below). The assessment tools were proposed at the beginning of the semester and were context-based assessment tools, with a practical assessment context (At1) and one with a cognitive assessment context (At2), both being formative assessment tasks. It was used also as a content-based assessment task (At3) as a summative assessment.

At1—The application of a teaching method/ assessment method is group work (3 students) of oral assessment task that used a practical assessment context.

At2- The design of the two lesson sequences-individual and written work assessment tasks- that used a theoretical cognitive assessment context.

At3-Summative written assessment using content-based assessment.

The research hypothesis was that using assessment task based on contextual learning determine significantly different assessment results from content-based assessments. The research questions were:

Q1. For which assessment task did students obtain the highest assessment score?

Q2. Are there significant differences between the scores obtained by context-based assessment tasks and content–based assessment task?

Q3. Are there significant differences between the scores obtained by different type of context-based assessment task scores?

Descriptive statistics were computed on each assessment task score. The three sample normality distributions Shapiro-Wilk Test results were the same .000, so p<0.01. The samples' data were not normally distributed. The sample was higher than 50 respondents and the T-test for paired samples was assumed, with statistical limitations. The Cohen's effect size was calculated for the significant differences. The analyses were made in the IBM SPPSS Statistics 21 program.

4. Results

Q1. For which assessment task did students obtain the highest score?

The highest score was obtained on At1 (the group oral presentation), meaning a 9.76 average score. On At2 (the lesson design), the average score was 8.15. The average score for At3 (the summative written assessment) was 7.93. These results revealed that students prefer the contextual assessment to the content-based assessment and the group assessment to the individual assessment. The obtained mean is very high for the first task, very closely from the maximum score. Also, the second and third assessment task had close in average, around 80% of the total score.

Q2. Are there significant differences between the scores obtained by context-based assessment tasks and content–based assessment task scores?

The T-test for paired samples and Cohen's effect size were used to calculate the relevant differences between context-based assessment (the two formative assessment task) and content-based assessment (summative written assessment). Each student's evaluation grade for each task was used for calculating the means of the group for each task. It compared each formative assessment task's mean with the mean obtained on the summative assessment task.

The T-test for paired samples revealed significant differences between the At1 (M=9.76, SD=.44) score and the At3 score (M=7.93, SD=1.42); t=14.01 and p=.000, so p<0.01. Also, Cohen's effect size is a very large positive effect (d=1.74). These findings sustain that using assessment task based on contextual practical learning is significant for the assessment practice, different from content-based assessment. Also, the very high significance between the two task and the higher value of context-based assessment task demonstrated the high impact of such assessment task on student's results (in grade).

The T-test for paired samples revealed no significant differences between the At2 (M=8.15, SD=2.97) score and the At3 score (M=7.93, SD=1.42); t=.710 and p=.479, so p>005. This reveals that using assessment task based on contextual cognitive learning has no significance for assessment practice, different from content-based assessment (summative written assessment). The two compared task was individual and written tasks and used much theoretical than practical learning. although the first task is one that uses the contextual assessment, being a formative one, no significant differences were identified regarding the grades obtained here and the contextual assessment, which was a summative one.

Q3. Are there significant differences between the scores obtained by context-based assessment task scores?

Comparing the two different context-based task scores, the T-test for paired samples revealed significant differences between At1 (M=9.76, SD=.44) score and At2 score (M=8.15, SD=2.97); t=5.886 and p=.000, so p<0.01. Although they differ in the type of assessment, the previously mentioned factors could still be decisive. The first task is still one of contextual learning - considering that it does not involve reproducing knowledge but putting it in a sequential design context of a lesson. However, Cohen's effect size demonstrated a more appropriate to high positive effect (d=0.76), which assures that the difference has statistically relevance in practice.

Table 1. Results in numbers

		Paired Sample Test			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	At1- At3	1,83421	1,39735	,13087	14,015	,000
Pair 2	At2- At3	,21667	3,25842	,30518	,710	,479
Pair 3	At1-At2	1,61754	2,93418	,27481	5,886	,000

5. Discussions

The study's goal was to analyze the influence of assessment based on contextual learning on students' learning results. The highest mean score obtained by students was on At1- which uses practical contexts in assessment (the oral group assessment), and the lowest was on At3 -which uses the context-based assessment (summative assessment). However, this study revealed significant differences between the scores obtained only by the first practical context-based assessment task and the content-based, summative assessment score. The second cognitive assessment task was also a written individual task but was different from the construction of the summative task because of the cognitive context created for it. There were no significant statistical differences between the second and third task results. The research hypothesis can be sustained partially, only for the first task and that using assessment tasks based on contextual practical learning determines significantly different assessment results from content-based assessments.

These findings sustained that the type of assessment task influences students' results, and their results are better in a practical context assessment task than in a cognitive theoretical contextual task and in an individual content-based task. It is essential to choose the appropriate type of task to sustain student progress and to create a context for assessing learning and not only knowledge (Ruel et al., 2003; Watkins, 2004). The assessment tasks influence the trustworthiness, relevance, and judgment of the critical approach to the information or events in the educational process (Shavelson et al., 2019).

Sustained by the twenty-first-century skills used in higher education assessment (Tremblay et al., 2012), Contextual assessment is a natural continuation of the university's Contextual Teaching and Learning approach. Its influence on university students' achievement or results previously presented in this study confirmed the wide range of methods and instruments used in CTL. Students perceive traditional assessment as unfair and damaging to learning; meanwhile, they consider innovative assessments engaging for deep learning (Iannone & Simpson, 2017). However, the university assessment literature does not confirm the same results regarding some specific methods, instruments, or approaches that could be relevant to students' results using this assessment approach. Various terminologies have been used in forms and approaches to assessment during this concept evolution: contextualized assessment, context-based assessment, authentic assessment (Klassen, 2006), assessment for learning (Wiliam, 2011) or sustainable assessment (Bound, 2000). It needs a structured and clear delimitation regarding the types of methods, tools, and specific assessment tasks based on learning contexts, especially in the educational process at the university level.

Poikela (2004) accentuated the importance of criteria in assessing context-based assessment. The assessment criteria of the contextual learning tasks and content-based assessment tasks were different in this study. Students need to internalize the assessment standards better despite the formative assessment used by teachers (Wu & Jessop, 2018). In this study, for example, the second task had more rigorous assessment criteria than the first (oral presentation). It is a factor that could also influence the significantly different obtained assessment grades, and this aspect must also be considered in future research. The third (written task) evaluated a much more comprehensive curriculum content, being a summative one, than each of the two formative tasks and could also influence the student's results.

The discussions could also involve differences in student results between group and independent assessment tasks. As Davies (2009) suggested, group work assessment involves more factors than a simple task. Analyzing each student's contribution and performance in group presentations is more complex than in written individual assessments. Future research could analyze the factors mentioned (the rigorous construction of assessment criteria, the modality of presentation, group or individual work assessment) and their correlation to impacting students' results in a contextual assessment.

More than just the summative purposes, it is required that also the summative assessment determine and sustain students' learning and progress,

make students' judgments of their learning, and assume the assessment task's requirements (Broadbent et al., 2018). Another study limitation was that the summative task was more content-based than learning-oriented tasks.

Formative assessment must contribute to and lead to summative assessment; consequently, formative assessment must precede summative assessment (Taras, 2008). Future research issue is how to correlate the characteristics of the context (different context types) with the students' specific achievement in formative and summative assessment contextual learning.

6. Conclusions

The finding of the research sustains the necessity to move the assessment shift from "assessment of learning" through "assessment for learning" to "assessment as learning," using assessment modalities of teaching and learning experiences (Torrance, 2007). One of these ways is to develop different assessment tasks that value contextual learning and assess the students' learning with valid criteria that positively influence students' results. The study concludes that assessments based on practical contextual learning tasks have a more positive impact on students' results than content-based assessments. Also, this study sustained that the contextual assessment task type influences students' results, with the practical context determining better results than a cognitive-theoretical context. Assuring a set of assessment tasks that use contextual assessment in future research will ensure that assessment at the university level will meet the expectations of systematic evidence-gathering about learning (Brown, 2019) through contextual learning. The contextual assessment is learning-oriented and can be equally summative or formative (Wu & Jessop, 2018). However, using assessment tasks based on different contextual learning, not depending on the type of assessment, formative or summative, is a fact that could determine a student's learning progress. It is also an essential insight for future research of university teachers.

This study has some limitations. The fact that the scores of the samples were not normally distributed and we assumed the used correlation (because the sample was >50 students) is a limit that disturbs the assumption of the hypothesis. More important is that it is nonexperimental, not a group control sample, to see how different contextual assessment tasks can influence students' acquisitions or results in a standardized experiment. As seen in the discussion section, future research should consider several variables when affirming the influence of contextual assessment on student results. Also, it is important to have some experimentally confirmed criteria for construing and choosing the appropriate type of task for formative and summative contextual assessment that confirms students' progress in the educational process for assessing learning and not only knowledge.

This research could offer an example for starting the process to create a clear structure regarding the types of methods, tools, and specific assessment tasks based on university learning contexts. Mobile devices can support a wide range of formative assessment types (Hwang & Chang, 2011) and competency-based assessments (Coulby et al., 2010). So, it is essential to use technology-supported tools and techniques to assess context-based learning (Williams, 2008). Also, aligning with the need to use new technologies in the university process, research can continue in the sphere of the impact of their use in context-based assessment on student results or ways to build a new technologies tool useful for contextual assessment.

Authors note:

Carmen Maria Țîru is a a lecturer at The Teacher Training Department at the West University from Timisoara. The main areas of my professional interest are general pedagogy, adult education, and intercultural education. My scientific activity recommends me as co-author of several books and book chapters, support courses, and a practice guide for pre-primary education. Also, I have published some articles in educational journals, in the country and abroad. I was involved in several programs or projects that offered professional training programs in the field of pre-university and university teaching as a trainer, educational expert, or research member of several research teams by national projec

References

Alahmadi, N., Alrahaili, M., Alshraideh, D. (2019). The Impact of the Formative Assessment in Speaking Test on Saudi Students' Performance. *Arab World English Journal, 10*(1), 259-270.

Attard, A., Di Loio, E., Geven, K., & Santa, R. (2010). *Student-centered learning: An insight into theory and practice*. București: Partos Timișoara, 6-15.

Avargil, S., Herscovitz, O., & Dori, Y. J. (2012). Teaching thinking skills in context-based learning: Teachers' challenges and assessment knowledge. *Journal of science education and technology*, *21*, 207-225.

Baird, J. A., Andrich, D., Hopfenbeck, T. N., & Stobart, G. (2017). Assessment and learning: Fields apart? *Assessment in Education: Principles, policy & practice, 24*(3), 317-350.

Biggs, J., & Tang, C. (2011). Train-the-trainers: Implementing outcomes-based teaching and learning in Malaysian higher education. *Malaysian Journal of Learning and Instruction, 8*, 1-19.

Bortnik, B., Stozhko, N., & Pervukhina, I. (2021). Context-based testing as assessment tool in chemistry learning on university level. *Education Sciences*, *11*(8), 450.

Boud, D. (2000). Sustainable assessment: rethinking assessment for the learning society. *Studies in continuing education*, *22*(2), 151-167.

Broadbent, J., Panadero, E., & Boud, D. (2018). Implementing summative assessment with a formative flavour: A case study in a large class. *Assessment & Evaluation in Higher Education, 43*(2), 307-322.

Brown, G. T. (2019, June). Is assessment for learning really assessment? In *Frontiers in Education* (Vol. 4, p. 64). Frontiers Media SA.

Carless, D. (2017). Students' experiences of assessment for learning. *Scaling up assessment for learning in higher education*, 113-126.

Carless, D., (2007). Learning-orientated assessment: conceptual bases and practical implications. *Innovations in Education and Teaching International, 44*(1), pp. 57-66

Coulby, C., Hennessey, S., Davie, N., & Fuller, R. (2010). The use of mobile technology for work-based assessment: The student experience. *British Journal of Educational Technology, 42*(2), 251e265.

Crosling, G., Heagney, M., & Thomas, L. (2009). Improving student retention in higher education: Improving teaching and learning. *Australian Universities' Review*, The, 51(2), 9.

Davies, W. M. (2009). Groupwork as a form of assessment: Common problems and recommended solutions. *Higher education, 58*, 563-584.

Dewi, P. Y. A., & Primayana, K. H. (2019). Effect of learning module with setting contextual teaching and learning to increase the understanding of concepts. *International Journal of Education and Learning*, *1*(1), 19-26.

Glasson, T. (2008). Improving student achievement through assessment for learning. *Curriculum Leadership*, *6*(31), 1.

Hirumi, A. (2002). Student-centered, technology-rich learning environments (SCenTRLE): Operationalizing constructivist approaches to teaching and learning. *Journal of Technology and Teacher Education*, *10*(4), 497-537.

Hudson, C. C., & Whisler, V. R. (2007). Contextual teaching and learning for practitioners. *Journal of Systemics, Cybernetics and Informatics*, *6*(4), 54-58.

Hwang, G. J., & Chang, H. F. (2011). A formative assessment-based mobile learning approach to improving the learning attitudes and achievements of students. Computers & Education, 56, 1023e1031.

Iannone, P., & Simpson, A. (2017). University students' perceptions of summative assessment: The role of context. *Journal of Further and Higher Education*, *41*(6), 785-801.

Klassen, S. (2006). A theoretical framework for contextual science teaching. *Interchange*, *37*, 31-62.

Knight, P., & Yorke, M. (2003). *Assessment, learning and employability*. McGraw-Hill Education (UK).

Lotulung, C. F., Ibrahim, N., & Tumurang, H. (2018). Effectiveness of Learning Method Contextual Teaching Learning (CTL) for Increasing Learning Outcomes of Entrepreneurship Education. *Turkish Online Journal of Educational Technology-TOJET*, *17*(3), 37-46.

Madjid, S., Emzir, E., & Akhadiah, S. (2017). Improving Academic writing skills through contextual teaching learning for students of Bosowa University Makassar. *Journal of education, teaching and learning*, *2*(2), 268-272.

Meir, E., Wendel D., Pope, D. S., Hsiao, L. Chen, D., Kim, K. J. (2019). Are intermediate constraint question formats useful for evaluating student thinking and promoting learning in formative assessments? *Computers & Education*, 141, 103606.

Open University (2015), *Innovating Pedagogy*, Innovation Report 4, 2015, Open University, http://proxima.iet.open.ac.uk/public/innovating_pedagogy_2015.pdf.

Panikarova, N. P., Dzhamirze, N. K., Skurodumova O. B., Musaeva, K. M., Konovalova E. E. (2021). A influência da avaliação formativa das realizações acadêmicas dos alunos para aumentar sua motivação para estudar na universidade. *Revista EntreLigas*, Araraquara, 7(4), e021088.

Parchmann, I., Gräsel, C., Baer, A., Nentwig, P., Demuth, R., & Ralle, B. (2006). "Chemie im Kontext": A symbiotic implementation of a context-based teaching and learning approach. *International Journal of Science Education*, *28*(9), 1041-1062. http://dx.doi.org/10.1080/09500690600702512

Poikela, E. (2004). Developing criteria for knowing and learning at work: towards context-based assessment. *Journal of Workplace Learning*, *16*(5), 267-274.

Prince, M. J. & Felder, R. (2006). Inductive Teaching and Learning Methods: Definitions, Comparisons and Research Bases. *Journal of Engineering Education, 95*(2).

Putnam, A. R., & Leach, L. (2005). Contextual teaching with computer-assisted instruction. *Online Journal for Workforce Education and Development*, *1*(1), 5.

Rahayu, Mh.Sri, (2015). Improving students'learning achievement in civics using contextual teaching and learning method. *Researchers World*, *6*(4), 88.

Ruel, G., Bastiaans, N., & Nauta, A. (2003). Free riding and team performance in project education. *International Journal of Management Education*, *3*(1), 2638.

Sambell, K., McDowell, L., & Montgomery, C. (2013). *Assessment for learning in higher education.* Abingdon: Routledge.

Satriani, I., Emilia, E., & Gunawan, M. H. (2012). Contextual teaching and learning approach to teaching writing. *Indonesian Journal of Applied Linguistics*, *2*(1), 10-22.

Sevian, H., King-Meadows, T. D., Caushi, K., Kakhoidze, T., & Karch, J. M. (2023). Addressing Equity Asymmetries in General Chemistry Outcomes Through an Asset-Based Supplemental Course. *JACS Au*, *3*(10), 2715-2735.

Shavelson, R. J., Zlatkin-Troitschanskaia, O., Beck, K., Schmidt, S., & Marino, J. P. (2019). Assessment of university students' critical thinking: Next generation performance assessment. *International Journal of Testing*, *19*(4), 337-362.

Shute, V. J., Hansen, E. G., & Almond, R. G. (2008). You can't fatten A hog by weighing It–Or can you? evaluating an assessment for learning system called ACED. *International Journal of Artificial Intelligence in Education*, *18*(4), 289-316.

Stensaker, B. R. (2008). Outcomes of quality assurance: A discussion of knowledge, methodology, and validity. *Quality in Higher Education*, *14*(1), 3-13.

Stiggins, R. (2006). Balanced assessment systems: Redefining excellence in assessment. *Educational Testing Service*, 1-10.

Suadiyatno, T., Firman, E., Hanan, A., & Sumarsono, D. (2020). Examining the effect of contextual teaching-learning and anxiety towards students' speaking skills. *Journal of Languages and Language Teaching*, *8*(1), 100-107.

Sung, H. Y., Hwang, G. J., & Chang, H. S. (2015). An integrated contextual and web-based issue quest approach to improving students' learning achievements, attitudes and critical thinking. *Journal of Educational Technology & Society*, *18*(4), 299-311.

Suparman, L., Marhaeni, A. N., & Dantes, N. (2013). The effect of contextual teaching and learning approach and achievement motivation upon students'writing competency for the tenth grade students of sman 1 keruak

in the academic year 2012-2013. *Jurnal Pendidikan Bahasa Inggris Indonesia*, *1*.

Taasoobshirazi, G., & Carr, M. (2008). A review and critique of context-based physics instruction and assessment. *Educational Research Review*, *3*(2), 155-167.

Taras, M. (2008). Summative and formative assessment: Perceptions and realities. *Active learning in higher education*, *9*(2), 172-192

Tight, M. (2002). What Does It Mean To Be a Professor? *Higher Education Review, 34*(2), 15-32.

Torrance, H. (2007). Assessment as learning? How the use of explicit learning objectives, assessment criteria, and feedback in post-secondary education and training can come to dominate learning. *Assessment in Education, 14*(3), 281-294.

Tremblay, K., Lalancette, D., & Roseveare, D. (2012). Assessment of higher education learning outcomes: Feasibility study report, Volume 1–Design and implementation. *Paris, France: Organisation for Economic Co-operation and Development*, *1*.

Umar, A. T., & Majeed, A. (2018). The Impact of Assessment for Learning on Students' Achievement in English for Specific Purposes: A Case Study of Pre-Medical Students at Khartoum University: Sudan. *English Language Teaching*, *11*(2), 15-25.

Watkins, R. (2004). *Groupwork and assessment: The handbook for economics lecturers*. Economics Network, http://www.economicsnetwork.ac.uk/handbook/printable/groupwork.pdf.

Wiliam, D. (2011). What is assessment for learning?. *Studies in educational evaluation*, *37*(1), 3-14.

Williams, P. (2008). Assessing context-based learning: not only rigorous but also relevant. *Assessment & evaluation in higher education*, *33*(4), 395-408.

Wu, Q., & Jessop, T. (2018). Formative assessment: missing in action in both research-intensive and teaching focused universities? *Assessment & Evaluation in Higher Education*, 43(7), 1019-1031.

Yeni, Y. R., Syarifuddin, H., & Ahmad, R. (2019, August). The effect of contextual teaching and learning approach and motivation of learning on the ability of understanding the mathematics concepts of grade V student. In *IOP Conference Series: Earth and Environmental Science* (Vol. 314, No. 1, p. 012064). IOP Publishing.

Appendixes

PEDAGOGY II DISCIPLINE'S ASSESSMENT

The seminar assessment tasks were:

At1. Application of a teaching/assessment method – assessment in a practical context

The task will be carried out in the team established by the teacher (3 students), according to the plan. The presentation will be made orally, on the settled date, and consist of exemplifications of the concrete way of applying the method on the chosen topic.

Assessment scale:

Definition of the teaching/assessment method 0.5 points

Teacher activity 1 point

Student activity 1 point

Advantages 1 point

Disadvantages 1 point

The topic of the lesson in which the application of the method will be carried out (from the Syllabus related to the student's specialization) - 0.5 points

Exemplifications of the concrete way of applying the method on the chosen topic (obligatory concrete means used will be presented - for example the constructed worksheets, how the class will be divided, what indications will be offered, etc.) - 3 points

Creativity – 1 point

Total 9 points + 1 ex officio point. Total score: 10 points.

At2. Design of the lesson sequences –assessment in a cognitive theoretical context

You can choose any subject from the Syllabus related to the specialization, grades V_VIII. The design will be carried out according to the project format proposed in the discipline. Please follow and be guided by the proposed scale.

Assessment scale:

Identification of the specific competence/s from the syllabus - 1 point

Formulation of lesson objectives – 2 points

Coherent explanation, with examples of the learning content - 2 points

Formulation of the lesson stages, according to the type of lesson - 0.5 points

Formulation of the didactic strategy (and the component elements) -1.5 points

Correlation of the objective/s with the learning content- 0,5 points

Correlation of the introductory part with the descriptive part of the lesson plan-0.5 points points

Creativity – 1 point

Total 9 points + 1 ex officio point. Total score: 10 points.

At3. The summative evaluation of the course as a written examination on the hole discipline' topics.