Ad-Hoc Assessment for Microlearning Units in Competency-Based Learning Paths in Learning Management Systems

Tina John
Institute for Interactive Systems, Technische Hochschule, Mönkhofer Weg 239, Lübeck, Germany

Keywords: Assessment, Performance Test, Moodle, Competency Acquisition, Adaptive Learning Paths.

Abstract: The project Onlinecampus Pflege develops an online training that supports the acquisition of digital skills specifically for the success of good care. Nursing is a diverse profession, and so are the digital skills of professional nurses. The learning environment of the target group is characterised by a generally small space for training periods. In view of the heterogeneity of the target group, which enters the learning offer with very different previous knowledge, the learning journey should be individualized and shortened via assessments. A method that implements adaptive learning paths in the learning management system (LMS) Moodle is presented. Summative assessments, which are derived from formative-summative assessments of learning units, can be specifically chosen by learners to demonstrate existing competencies without having to complete corresponding learning units. The process can be implemented cost-effectively with little effort, as it largely uses the native functions of the LMS, but applies them in a new context. The process is currently being tested. Analyses of learning behaviour and acceptance of the procedure are sought.

1 INTRODUCTION

As part of the BMBF-funded joint project Onlinecampus Pflege (Online Campus Care), a mobile, freely accessible self-learning offer for professional nurses is developed and tested to promote the competent use of digital technologies in nursing and care (Wullf et al., 2022; Möller et al. 2023). The self-learning programme should give learners the opportunity to pursue learning goals according to their individual interests and to expand their own skills profile. Learners should be able to learn at their own pace so that the advantages of a self-study programme can be exploited.

In addition, existing competences should be recognised. A suitable procedure for the latter, which can be implemented under the given framework conditions of the Onlinecampus Pflege learning platform, is developed and proposed in this paper.

The target group that is to use the learning offer has to be taken into account to a large extent. Nursing is a diverse profession, and so are the digital skills of professional nurses. Despite all the differences, one thing is the same for all: the learning environment is characterised by a generally small space for training periods.

Short, thematically and didactically self-contained learning units, so-called "learning nuggets" (Bailey et al., 2006, pp. 114), can be completed in small time slots. These microlearning units are therefore very suitable for the online self-learning programme for professional nurses, as an evaluation of the Onlinecampus nursing learning platform has already confirmed (Möller et al., 2023).

Learning nuggets are also very suitable for creating learning paths, which can also be designed adaptively (Mayrhofer, 2021). Learning paths are curated sequences of learning nuggets that are completed by learners in a predefined order and train larger topics or multiple topics in small learning bites. Learning paths are adaptive in that they are designed differently for individual learners. Mayrhofer (2021) presents a conceptual framework for adaptive learning in learning paths that offers learners appropriate learning paths based on an individual choice of topic and level of difficulty that meet the chosen specifications. The level of difficulty could also be derived from the user profile.

Due to the framework conditions, the adaptivity of the learning paths in the Onlinecampus Pflege should not and cannot be achieved through the selection of difficulty levels or user profile data for mastered topics as proposed by Mayrhofer (2021).

John, T.
Ad-Hoc Assessment for Microlearning Units in Competency-Based Learning Paths in Learning Management Systems.
DOI: 10.5220/0012706800003693

In *Proceedings of the 16th International Conference on Computer Supported Education (CSEDU 2024) - Volume 1*, pages 518-525
ISBN: 978-989-758-697-2; ISSN: 2184-5026

The aim of this research is to propose an implementation of adaptive learning paths in the learning management system Moodle, where the adaptivity lies in the consideration of existing knowledge. The existing knowledge is to be determined directly in the learning path via ad hoc assessments. For the development, different competence and experience assessment methods are weighed up. The continuing education platform Onlinecampus Pflege, on which the assessment is to be used, specifies certain framework conditions that were taken into account in the preliminary considerations for the implementation of a suitable procedure. Framework conditions, preliminary considerations and the implementation of a suitable assessment method are presented and discussed.

2 ASSESSMENT PROCEDURES

A distinction is made between performance testing and document testing for the assessment of competence and experience (Annen 2012). During the document review, written evidence is presented and checked accordingly for compliance with the requirements and for the authenticity of the document. A distinction must be made between this and the performance test, in which competences are proven in an examination situation or in a test. From the behaviour shown (performance), the competencies can then be deduced. (Annen 2012).

For performance tests, a distinction can be made between summative and formative assessments. Summative assessments are final assessments conducted at the end of a learning period to assess a learner's overall performance. They are usually designed to evaluate the knowledge and skills gained and are intended to assess overall success.

Formative assessments, on the other hand, are continuous assessment actions that are carried out during the learning process to monitor learners' progress and provide targeted feedback. This type of assessment is the focus of the learner's development and support. Teachers use formative assessments to gain insights into strengths and weaknesses, tailor instruction, and help students improve their skills. Examples of formative assessments include verbal feedback, short tests, peer reviews, and class participation.

The main difference between summative and formative assessments lies in their purpose and timing. Whereas summative assessments are a final assessment and measure overall success, formative assessments are designed to support and encourage the ongoing learning process. Both approaches are important to get a holistic view of learning progress and to take into account both student achievement and development. (Ismail et al. 2022, Glazer 2014)

Wininger (2005) was able to show that a combination of formative and summative assessments led to higher learning success and better qualifications. Glazer (2014) was also able to demonstrate higher learning success by combining formative and summative assessments in a targeted alternation of both types on an "assessment clock" (pp. 279). An overall assessment by a cumulative assessment at the end of the assessment clock complements the two types.

A common means of assessing competencies is self-assessment, which can be designed in different ways. From Rott et al. (2021, p. 50) self-assessments tend to capture subjective beliefs. Kotrubczik (2008) and KOMET (2021) present different methods of self-assessment. Both use questionnaires, whereby the questions collect data either in binary with yes or no (KOMET, 2021), or with an assignment to a scale value (Kotrubczik, 2008). This data is evaluated in order to be able to draw conclusions about the existing competencies.

3 FRAMEWORK CONDITIONS

3.1 Learning Management System

The Onlinecampus Pflege is implemented as a Moodle (Moodle, nd.) instance. Moodle nativly offers learning on competency-based learning paths. Competence catalogues can be stored in the system and learning activities or entire courses can be linked to them in such a way that competences can be recognised after completion of the learning activity or the entire course. Learning paths can be used to connect multiple competencies. This feature is typically used by teachers to assemble the curriculum for various learners. Moodle additionally provides a dashboard where users can search for learning units or catalogue courses that have been completed or are presently being attended.

3.2 Competence Orientation

The learning programme covers various dimensions of competencies. Each individual competence represents a combination of different facets of the competence dimensions. Although learning nuggets in the Moodle instance can generally be selected in an exploratory manner, adaptive learning only takes place on learning paths that are curated accordingly

on the basis of the specified competences. Learning nuggets are linked to smaller sub-competences.

3.3 Competence Model and Competence Catalogue

A scoping review (Pengel et al. 2022) showed that there are no competence models that address digital competencies in care.

In the formulation of the competencies, an attempt was made to find a mapping to competencies from the ESCO taxonomy (European Commission, Directorate-General for Employment, Social Affairs and Inclusion 2019) in order to enable later mobility of one's own competency profiles throughout Europe, e.g. via EUROPASS, which is intended as a European instrument to promote transparency in the education system to facilitate the understanding of qualifications and competencies within Europe (Bopp, 2020).

3.4 Microlearning Units in the LMS

The current 45 learning nuggets follow most of the key aspects of the instructional flow and the design of content in the microlearning framework. See Nurul et al. (2023) for a systematic literature review. The learning objectives of the nuggets are well defined and presented to the learner, several media formats are used within each nugget, there are practical exercises and instant feedback is given on learning progress. The content within a learning nugget is structured in very short bites in such a way that in sum a nugget requires a maximum workload of 20 minutes for the learner. The variation in workload across the learning nuggets is 5 – 20 minutes.

The media didactic concept provides performance tests in the form of formative-summative assessment (Glazer, 2014) following the differently designed learning resources. This is realised by quizzes designed to match the learning objectives. The quiz is an interactive activity from the HTML5 package. There are several types of question sets used. Basically, tests must be successfully completed as a summative assessment in order to complete the learning nugget and make progress in acquiring competences. The formative part has been implemented by providing the learner with the opportunity to repeat tasks as often as they wish, and by providing feedback through the scoring visualization. In addition, the solutions can be displayed after an unsuccessful attempt. In this way, the assessment itself also becomes a learning unit, but at the same time, upon successful completion, it leads to the recognition of the sub-competency associated with the learning nugget.

3.5 Competency-Based Learning Paths

Learning nuggets can be completed in several different learning paths in a sequence specified by the system. The learning paths are didactically designed in such a way that each learning nugget on the path addresses one or more proportionate sub-competencies. Several smaller sub-competencies together form a more general sub-competency. Each learning path contains learning nuggets for the acquisition of all the smaller sub-competencies that lead to a more general sub-competency. In turn, several learning paths together make it possible to acquire general competences.

3.6 Certifying Learning Outcomes

The reporting of learning success will be realised via a digital certificate, which does not contain the completed learning units or learning nuggets with the learning objectives, but the corresponding competencies acquired. In this way, a more universal recognition is made possible.

The prerequisite for the competencies to be identified is the successful completion of all learning nuggets that address proportionate sub-competencies of the respective competence. In the case of learning on system-determined learning paths, the completion of the corresponding learning paths is a prerequisite for identification on the certificate.

Under the given conditions, every learner would have to complete all the required learning units to demonstrate competency. This concept has traditionally been a successful approach in the school context. However, in the context of continuing education, especially for voluntary interest-based learning, it is a time-consuming process. Given the heterogeneity of the target group, who enter the learning offer with very different previous knowledge, the learning path would be the same for everyone, although it is expected that not the entire learning offer is equally relevant for all participants due to already existing competencies. Assessments can shorten the journey.

4 METHOD

4.1 Preliminary Consideration

It is not possible to check documents to determine competence and experience in the self-study programme. The competence dimensions that cover the learning content of the Onlinecampus Pflege are

specifically geared towards digital competencies related to care, which made it necessary to develop the competence model and the competence catalogue. The platform does not provide any authority that can arrange for the verification of the written documents and recognition. Although it would be technically possible to recognise already recognised competencies from competence taxonomies from digital certificates, the lack of mapping of the Onlinecampus Pflege competencies to competencies of other competence models (cf. 2.3) prevents this type of assessment of skills and experience. For these reasons, the decision was made to use performance tests. It was decided against self-assessments by questionnaires, as the competency test should not only reflect the level of learning in order to be able to offer further interesting learning opportunities, but also to be able to demonstrate competences. The formative-summative learning assessments require the successful completion of each test. A positive subjective conviction from questionnaires is not sufficient for this. Keeping in mind that the target group's learning environment is characterised by a generally small space for training periods, there is even less space for questionnaires. Combining learning and assessment might be the best solution.

4.2 Implementation of the Ad-Hoc Assessment

The Moodle-native procedures for dealing with competencies and learning paths are being utilized. The Onlinecampus Pflege competency catalogue has been prepared as a machine-readable CSV file and uploaded to the Moodle instance, where curative learning paths have been created and configured. The learning paths' titles have been designed to name the achievable competencies. The competencies are configured using the native functionality in Moodle, so that when different sub-competencies are achieved, the more general competency is automatically completed. Additionally, the didactically favourable sequence of courses can be regulated by the prerequisites for course access. However, in the Onlinecampus Pflege, this is avoided in order not to unduly restrict the exploratory choice of learning nuggets, as that may demotivate learners. In addition, each learning nugget is supplemented by an assessment course and linked to the identical competency.

In order to implement the assessment, the Moodle instance was complemented by the Moodle plugin Learning Plans Progress X Version (John, 2023). It visualises the learning plan stored in the system for the learner by means of a list of competencies (see Figure 2). Additionally, a grandchild theme is used to override Moodle's own user interface for displaying courses associated with a competency and to add the required language strings, colours, icons and dynamics (John, 2024).

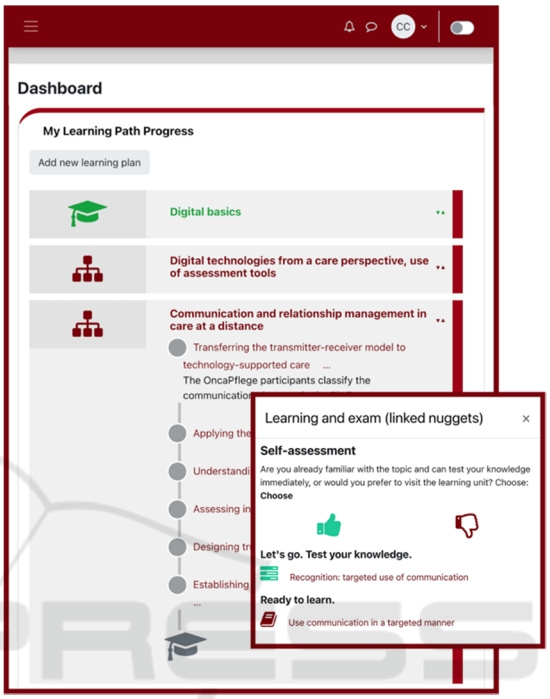

Figure 1: Visualisation of the self-assessment offer (right) and some learning paths (left) prominent on the user's dashboard, with the first learning path completed (green), the second uncompleted and collapsed, and the third uncompleted and opened with sub-competencies listed, and a complete sub-competence description visible. Thumbs are interactive buttons, displaying the link to the performance test (Recognition) or the link to the learning nugget (red book icon).

Learners can customise their learning journey, with the initial selection of the learning objective taking place without any explicit assessment. Learners choose from the general competences offered, which are represented as a learning path (see Figure 1), those that they want to acquire or demonstrate. At this point, a chatbot or a questionnaire could alternatively find out the needs of the learner and suggest suitable competencies. However, insofar as the learning offer is manageable in terms of the number of general competencies that can be acquired, an assessment from the learner's perspective is not to be regarded as very profitable. The learner's effort in terms of benefits is simply too high.

After selecting the learning pathway, the sub-competencies are made available for selection. The competencies presented here offer learners the opportunity to have their partial competencies recognized through assessment, or to attend the learning nugget directly. This is where individual self-assessment takes place, with the sub-competencies arranged in a didactically favourable order.

Figure 2: Exemplary simplified assessment Moodle course with a summative test by H5P quiz passed (left) with feedback that the learning nugget presented below will be credited, and with failed test (dashed on the right) with feedback that the knowledge in the presented course needs to be refreshed.

The assessment itself contains the formative-summative assessment from the corresponding learning nugget as a purely summative assessment. For this purpose, all formative approaches are removed. There is no way to repeat the task. This limitation is extensively pointed out by a specifically designed course design.

The learner is confronted with an instruction and can only solve the task when the corresponding instruction is actively marked as read. Only then will the task or tasks be displayed.

Depending on how the task or tasks have been mastered, feedback on success or failure is dynamically generated. If successful, the competency will be recognised, and the learner will be informed accordingly which learning nugget could be credited.

Espasa et al. (2022) formulate five characteristics that feedback must have. Feature two is to tell the learner what they did right and what they need to improve, along with guidance on how to do the task better. According to feature two, guidance is given when the learner fails. They are directed to the learning nugget that must now be completed in order to complete the subskill selected from the learning path (see Figure 2). The learner is automatically enrolled in the course so that the course can also be easily found on the dashboard independently of the learning path. In line with the third characteristic that feedback should fulfil, learners can thus easily engage with the given feedback and take action by completing the learning nugget with the learning materials and formative-summative assessment.

The assessment method presented shortens the path to demonstrable competence for learners without much effort in a learning management system. Knowledge can be proven, and missing knowledge can be supplemented. The choice of path can be controlled individually.

5 DISCUSSION

From the learner's perspective, assessments must bring more benefit than effort. Assessments should be able to capture existing knowledge or competencies and highlight missing knowledge or skills. The different types of assessments are subject to different framework conditions. Depending on the scope, self-assessments by questionnaires, though common, can be perceived by learners as a considerable additional expenditure of time, in which no learning takes place. For a target group with limited time for learning, this method cannot be used. Within the conditions of a voluntary self-learning programme tailored to a specific target group with limited available learning time, the learner must remain motivated to learn. Self-assessments through ad-hoc performance tests immediately reveal learners' deficits and the presented method provides an immediate solution to remedy them. Because the learning nuggets are short, the immediate learning opportunity can be motivating.

The presented method offers the opportunity to learn at one's own pace, but to have already known knowledge quickly recognised with hardly noticeable additional effort. Learners are individually challenged and supported through this type of assessment. That was the goal of the method presented.

Through the combination of different assessments of a summative and formative nature, learning is strengthened, but also self-assessment is trained. With the method presented, competence assessment takes place not only through pure performance checks in the test procedure, but also indirectly through self-assessment, without it being identified as such. The presented method promotes the ability of correct self-assessment by actively deciding for or against the assessment before the learning content. A passed assessment with the self-assessment of being able to pass it supports one's own perception, whereas a failed assessment also corrects the self-assessment instructively without far-reaching consequences. The consequence is essentially that the learner cannot skip the learning content and must complete all tasks until the learning assessment is successfully completed to be able to complete the learning path and certify a competency.

The method is similar in approach to the algorithm-based adaptive learning of the commercial provider Area9, which is used in Hickmann et al. (2022) and Meaney et al. (2023) and is classified as successful and efficient for learning. Similar to the method presented, learning objectives are defined, learning units are designed and assessments that are summative in nature are created. Curated learning paths created for a learning objective uncover knowledge gaps during the learning journey and provide appropriate learning material to refresh or learn. Gaps in knowledge are revealed through assessments that are carried out during learning. Up to this point, the procedure is very similar to the method presented here. However, self-assessment plays a crucial role in the procedure described in Hickmann et al. (2022) and Meaney et al. (2023). The self-assessment is carried out explicitly for each question by entering the certainty with which the question presented can be answered or not. The self-assessment and response behavior together determine the algorithm-based choice of the learning content, which is next queried or displayed.

According to the literature, the procedure is successful but still not feasible with a short development time for a free, freely accessible self-learning offer, which can even certify competences. The development of the algorithm-based choice of learning content is very time-consuming and resource-intensive and involves a lot of training data. Also, a lot of learning materials are needed, which should cover very diverse learning levels as well. If these prerequisites are not met, the method presented here still represents a solution for the LMS Moodle, which can be implemented cost-effectively with little effort. The biggest effort is to set up the assessments as Moodle courses and to configure the corresponding quizzes as summative assessments.

Whether the assessment of competencies via quizzes is the most suitable method is debatable, but so far there is no competition within the given framework conditions.

However, whichever method is used, using the same method in the assessment is the most direct way to compare learners and knowers. Carrying out the assessment and the assessment in the same way therefore allows the same recognition of already existing knowledge and knowledge learned through concrete learning content.

Of course, the pursuit of this approach is subject to specific framework conditions, which are provided in online learning courses, particularly in the compact format such as that of the microlearning units, which includes a learning status check as a requirement to complete the learning unit. In analogous comparisons or for longer final examinations, this assessment method can be too time-consuming from the learner's perspective. In addition, such tests leave little room for direct reference to deficiencies and corresponding learning supplements.

Future work must examine whether ad-hoc assessment is accepted by learners at all, whether it promotes self-reflection among learners, and whether it can motivate them to learn. Mayrhofer (2021) comes to the conclusion that learning paths are perceived by learners as a nice add-on but not really necessary. Initial impressions from the test phases of the Onlinecampus Pflege platform that have already been carried out with up to 490 participants in total, which includes more or less active learners, also show no particular attractiveness of learning via learning paths compared to the exploratory selection of learning nuggets. The reasons for this have not yet been sufficiently investigated. In a further test phase, the learning paths will be integrated more prominently on the platform (see Figure 1) and will include the additional functionality of ad-hoc assessment. As ad-hoc assessment is only used in the learning paths in the Onlinecampus Pflege, the question of whether ad-hoc assessments can have a motivating effect on learning remains open at this point and could stay unanswered if learning on

learning paths is not accepted by the learner. Under certain circumstances, the integration of assessment into the learning paths can promote motivation to learn on learning paths and thus to acquire specific competencies.

6 CONCLUSIONS & OUTLOOK

A cost-effective process could be presented that can shorten the time acquisition of skills in the LMS Moodle depending on the existing competencies. Competencies can be proven by successfully completing quizzes, but the direct comparison with other learners is not lost, as everyone has to solve the same tasks for the proof. Moodle's native learning pathways become adaptive through this process and can contribute to the individualization of the learning journey.

The procedure is currently being tested in the Onlinecampus Pflege Moodle instance. Only the subsequent analyses of user behaviour and evaluations will provide information on whether the learners take advantage of the offer and whether they rate it as promoting and motivating for learning.

ACKNOWLEDGEMENTS

This study was funded by Federal Ministry of Education and Research funding guideline INVITE (grant number 21INVI09)

REFERENCES

Annen, S. (2012): Anerkennung von Kompetenzen: kriterienorientierte Analyse ausgewählter Verfahren in Europa. W. Bertelsmann Verlag.

Bailey, C., Zalfan, M. T, Davis, H. C., Fill, K., & Conole, G. (2006). Panning for Gold: Designing Pedagogically-inspired Learning Nuggets. *Educational Technology & Society, 9 (1)*, 113-122.

Bopp, F. (2020). *Das neue Europass-Portal: Potenziale und Herausforderungen eines komplexen Projekts*. Bonn: Franz Steiner Verlag.

European Commission, Directorate-General for Employment, Social Affairs and Inclusion. (2019). *ESCO handbook: European skills, competences, qualifications and occupations*. Publications Office.

Espasa, A., Mayordomo, R. M., Guasch, T., & Martinez-Melo, M. (2022). Does the type of feedback channel used in online learning environments matter? Students' perceptions and impact on learning. *Active Learning in Higher Education, 23 (1)*, 49-63. https://doi.org/10.1177/1469787419891307

Glazer, N. (2014). Formative plus summative assessment in large undergraduate courses: Why both? *International Journal of Teaching and Learning in Higher Education*, *26*(2), 276–286.

Hickmann, A., Ferrari, A., Bozinov, O., Stienen, M. N., & Ostendorp, C. (2022). Neurosurgery resident training using blended learning concepts: course development and participant evaluation. *Neurosurgical Focus*, *53*(2), E13.

Ismail, S.M., Rahul, D.R., Patra, I., Rezvani, E. (2022) Formative vs. summative assessment: impacts on academic motivation, attitude toward learning, test anxiety, and self-regulation skill. In *Lang Test Asia* 12, 40.

Jahnke, I., Lee, Y.-M., Pham, M., He, H., & Austin, L. (2020). Unpacking the Inherent Design Principles of Mobile Microlearning. *Technology, Knowledge and Learning*, *25*(3), 585–619.

John, T. (2023) Learning Plan Progress X Version [Software]. GitHub. https://github.com/tinjohn/moodle-block_lpprogressx

John, T. (2024). OncaPflege Childtheme Self-Assessment [Software]. GitHub. https://github.com/tinjohn/moodle-theme_learnr_oncapflege_child/tree/selfassessment.

Kogga, D., Krawietz, N., Cevik, F., Brandau, S., & Li, M. M. (2017): Design Prinzipien für Microlearning Crowdsourcing-Systeme - Konzept für audiovisuelle Mediengestaltung. In: *13th international conference on wirtschaftsinformatik (wi), St. Gallen, Schweiz*.

KOMET. (2021): Kompetenzrastererfassungstool. https://comet.edustandards.org/selbsteinschaetzung-persoenlichen-entwicklung. abgerufen am 23.11.2021.

Kotrubczik, H. (2008): *Fragebogen zur Selbsteinschätzung der Kompetenzen im beruflichen Kontext*. Thesis. Fachhochschule Zürich.

Mayrhofer, W., Nixdorf, S., Fischer, C., Zigart, T., Schmidbauer, C., & Schlund, S. (2021). Learning Nuggets for Cobot Education: A Conceptual Framework, Implementation, and Evaluation of Adaptive Learning Content. In *Proceedings of the Conference on Learning Factories (CLF) 2021*.

Meaney, P. A., Hokororo, A., Masenge, T., Mwanga, J., Kalabamu, F. S., Berg, M., Rozenfeld, B., Smith, Z., Chami, N., Mkopi, N., Mwanga, C., & Agweyu, A. (2023). Development of pediatric acute care education (PACE): An adaptive electronic learning (e-learning) environment for healthcare providers in Tanzania. *Digital health, 9*, 20552076231180471.

Moodle. (n.d.). Homepage. Retrieved January 16, 2024, from https://moodle.org/.

Möller, A. L., John, T., Borcherding, G., Pengel, J., Wullf, S., Janneck, M., Hülsken-Giesler, M., Meißner, A. (2023): Onlinecampus Pflege: Gute Pflege mit digitaler Unterstützung ermöglichen. Das Weiterbildungsangebot für digitale Kompetenzen in der beruflichen Pflege. In Boll, S. et al. (Hrsg.): *Zukunft der Pflege. Tagungsband der 6. Clusterkonferenz 2023*. Oldenburg. S. 39-43.

Nurul Fitriah Alias & Rafiza Abdul Razak. (2023). Exploring the pedagogical aspects of microlearning in educational settings: A systematic literature review. *Malaysian Journal of Learning and Instruction, 20*(2), 267-294.

Pengel, J., Wullf, S., Meißner, A., Borcherding, G., & Hülsken-Giesler, M. (2022). Digital competency frameworks for nursing: A scoping review. Hildesheim: Universitätsverlag Hildesheim. Last accessed: 01/02/2024.

Rott, K., & Schmidt-Hertha, B. (2021). Medienbezogene Kompetenzerfassung bei Erwachsenen. *Medien-Pädagogik: Zeitschrift für Theorie und Praxis der Medienbildung*, 42, 47-62.

Wininger, S. R. (2005). Using your tests to teach: Formative summative assessment. *Teaching of Psychology*, *32*(3), 164–166.

Wullf, S., Borcherding, G., Pengel J., Meißner, A. & Hülsken-Giesler, M. (2022). Onlinecampus Pflege: Für kompetenten Umgang mit digitalen Technologien in der beruflichen Pflege qualifizieren. *Zeitschrift für Sozialmanagement* 20/1, 131–138.