**Analysis and Synthesis of Formative Assessment Tools Used by the ASSET Project Partners**

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Universities face substantial change in a rapidly evolving global context and the demands on educators to provide valuable, student-centred assessment and feedback have never been greater. Research has shown strong links between the implementation of authentic assessment and high quality learning. Using digital technology within assessment, known as ‘e-assessment’ or ‘technology-enhanced assessment’, is not a new technological introduction to education. While the terms ‘e-assessment’ or technology enhanced assessment means many things to different people, we refer here to any use of digital technology for the purposes of formal educational assessment.

In one form or another, technology enhanced assessment or e-assessment has been around for more than two decades. Throughout its lifetime, scholars have suggested that it offers traditional assessment practices potential catalysts for change and responds to growing assessment challenges.

ASSET project aims at developing and using best practices of formative assessment tools and methods to evaluate students’ life-long learning skills in student-centred learning environments and to adjust teaching to better meet student's learning needs.

In order to develop a new formative assessment tools and methods within the ASSET project a survey was carried out to map the formative assessment tools used by the ASSET project partners in February 2018. Thirteen partners took part of the survey: Kinneret Academic College (KCJV), Hadassah Academic College (HAC), the College of Sakhnin for Teacher Education (SAK) and Gordon Academic College (GACE) from Israel. Ilia State University (ISU), Ivane Javakhishvili Tbilisi State University (TSU), Samtskhe-Javakheti State University (SJSU), Sokhumi State University (SSU) and National Center for Teacher Professional Development (NCTPD) from Georgia. Private University of Education of the Diocese of Linz, Austria (PHDL), Otto-Friedrich-Universitaet Bamberg, Germany (OFUB), University College of Cork, Ireland (UCC) and Tallinn University, Estonia (TU).

The Table 1 summaries the use of formative assessment methods and the Table 2 the use of instructional methods by ASSET project partners. A narrative description will be added by partner and some preliminary conclusions.

**Table 1:** Use of Formative Assessment Methods by ASSET project partners

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Formative Assessment**  **Methods** | **KCJV** | **HAC** | **SAK** | **GACE** | **ISU** | **TSU** | **SJSU** | **SSU** | **NC**  **TPD** | **PHDL** | **OFUB** | **UCC** | **TU** | **Total** |
| Self-assessment |  |  |  |  |  |  |  |  |  |  |  | x | x | 2 |
| Reflection |  |  |  |  |  |  |  |  |  | x |  | x | x | 3 |
| Peer-assessment |  |  |  |  |  |  |  |  |  | x | x | x | x | 4 |
| Team reflection |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Web-based peer assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Participative assessment |  |  |  |  |  |  |  |  |  | x |  |  |  | 1 |
| Classroom assessment techniques |  |  |  |  |  |  |  |  |  |  |  | x |  | 1 |
| Reflective journals |  |  |  |  |  |  |  |  |  | x |  | x | x | 3 |
| Reflective blogs |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Portfolio |  |  | x |  | x |  | x |  |  |  |  |  |  | 3 |
| e-Portfolio |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Lecture’s Feedback / monitoring (verbal/written/detailed/quick) |  |  |  |  | x | x |  |  | x |  |  |  |  | 3 |
| Peer-feedback |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Feedback of experts |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Feedback based on video recordings |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Group feedback via Skype |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Mindmaps or Concept Maps assessment |  |  |  |  |  |  |  |  |  |  | x |  | x | 2 |
| Information seeking & retrieval assessed by lecturers |  | x |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Preparation of research/academic papers assessed by lecturers |  | x |  | x |  |  |  |  |  |  |  |  |  | 2 |
| Supervised research work |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Summarizing the research papers assessed by lecturers |  | x |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Field paper assessed by lecturers |  |  | x |  |  |  |  |  |  |  |  |  |  | 1 |
| Quizzes and tests | x | x |  | x | x | x |  | x |  |  |  |  |  | 6 |
| E-Quiz via audience-response system as check of students’ understanding and starting point for deeper discussions |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Video related quizzes |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Online progress Quizzes |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Online tests |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Presentation of the group project or case assessed by lecturers |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Panel and e -Discussion |  |  |  |  |  |  |  |  |  |  | x | x |  | 2 |
| Pyramiding (Snowball Groups) |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Social Network Analysis (SNA) |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Open Online Badges |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Entrance and exit ticket |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Lecturer’s analysis of video recording |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Measuring students’ perception of the learning environment: asking for emotional, volitional & cognitive states at particular points during the course |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Poster presentation as a simulation of the final test |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| In between presentations |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Project interim reports assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Audience response systems to discuss students solutions |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Multimedia presentations |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Cooperation with practitioners |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Twitterchat |  |  |  |  |  |  |  |  |  |  |  | x |  | 1 |
| Padlet posts |  |  |  |  |  |  |  |  |  |  |  | x |  | 1 |
| Video introduction |  |  |  |  |  |  |  |  |  |  |  | x |  | 1 |
| Online Diagnostic Analysis Survey |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Buzz/brainstorm sessions |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Feedback system in the Study Information System (ÕIS) |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Personal Vignette |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Three points summary |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| 1-minute reflection writing assignments |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Use of wikis |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Stealth assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Learning agreements |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Interim bibliography assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Interim literature review assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Rank and report assessment |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Critical synthesis of discussions |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Team observation |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Questioning strategies |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Assessment of group work and performance |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Self-diagnostic opportunities |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |

**Table 2:** Use of Teaching and Learning Methods by ASSET project partners

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Teaching and learning methods** | **KCJV** | **HAC** | **SAK** | **GACE** | **ISU** | **TSU** | **SJSU** | **SSU** | **NC**  **TPD** | **PHDL** | **OFUB** | **UCC** | **TU** | **Total** |
| Problem-based learning | x | x | x | x | x | x | x | x |  | x |  |  | x | 10 |
| Project-based learning | x |  | x | x | x |  | x | x |  |  | x |  | x | 8 |
| Case-based learning |  | x | x |  |  | x | x | x | x |  | x |  | x | 8 |
| Inquiry-based learning |  |  |  |  |  |  |  |  |  | x |  |  | x | 2 |
| Context-based learning |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Evidence based practice |  | x | x |  |  |  |  |  |  |  |  |  |  | 2 |
| Game-based learning (gamification) | x |  | x | x |  | x | x |  | x |  | x |  | x | 8 |
| Interactive games |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Flipped classroom |  | x |  |  |  |  |  |  | x |  | x |  | x | 4 |
| Place-based learning |  |  | x |  |  |  |  |  |  |  |  |  |  | 1 |
| Scenario-based learning |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Scenario-based e-learning |  |  | x |  |  |  |  |  |  |  |  |  |  | 1 |
| Value and Knowledge Education (VAKE) | x | x | x | x |  | x |  | x |  | x |  |  |  | 7 |
| Learning by teaching |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Self-regulated learning |  |  |  |  |  |  |  |  |  |  | x |  |  | 1 |
| Action research seminar |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Mathematics didactical seminar |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Online disciplinary course |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Outdoor activity |  |  |  | x |  |  |  |  |  |  |  |  |  | 1 |
| Simulations of the lessons |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Virtual reality simulations |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| „Critical friends” model |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Blogging |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Class Edmodo |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Interactive teaching |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| School practice |  |  |  |  | x |  |  |  |  |  |  |  |  | 1 |
| Continuum |  |  |  |  |  |  | x |  |  |  |  |  |  | 1 |
| Debate |  |  |  |  |  |  | x |  |  |  |  |  |  | 1 |
| Bono’s 6 Hats |  |  |  |  |  |  | x |  |  |  |  |  |  | 1 |
| Heuristic method |  |  |  |  |  |  |  | x |  |  |  |  |  | 1 |
| Role play |  |  |  |  |  |  |  |  | x |  |  |  | x | 2 |
| Media analysis |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Sketching to learn |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Modelling |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Proust questionnaire |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Image description |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Comparison of historical resources |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Practical work |  |  |  |  |  |  |  |  | x |  |  |  |  | 1 |
| Discussions |  |  |  |  |  |  | x |  |  |  | x |  |  | 1 |
| Weekly online discussions |  |  |  |  |  |  |  |  |  |  |  | x | x | 2 |
| Seeking and evaluation of information sources |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Analysis and synthesis of the literature |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Prototype design and modelling |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Learning through argumentation |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Reflective learning |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Learning through storytelling |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Crossover learning |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |
| Analytics of emotions |  |  |  |  |  |  |  |  |  |  |  |  | x | 1 |

*Kinneret Academic College* uses problem-based learning (PBL), project-based learning (PjBL), value and knowledge education (VaKE) and game-based learning as instructional methods in their teaching and learning. Those instructional methods are related to education-related courses such as “Formal and informal education in different communities” and “Instructional methods”. However, formative assessment methods are not used in KCJV.

Hadassah Academic College uses PBL, VaKE, flipped classroom and evidence-based practice (EBV) as instructional methods in their teaching and learning. Those instructional methods are related to medical education-related courses (e.g. Microbiology & Clinical Microbiology, Introduction to Patient Care, Optometric Screenings, Ocular Anatomy, Theoretical Optometry B1theoropt, Binocular Vision Lecture, Clinical Optometry, A B2clinoptA, Visual perception lab and course, Vision Therapy A, Contact Lenses). The assessment methods used are quizzes, no formative tools were mentioned (instructional methods and tasks were reported as assessment tools).

*The College of Sakhnin for Teacher Education* uses PBL, PjBL, VaKE, Game-based learning or gamification, case-based learning (CBL), evidence-based learning (EBL), place-based learning (PLBL) and scenario-based e-learning as instructional methods in their teaching and learning. These methods are used in various courses. The formative assessment methods used are portfolio (instructional methods and tasks were reported as assessment tools).

*Gordon Academic College* uses PBL, PjBL, VaKE, game-based learning, online interdisciplinary course, mathematics didactical seminar, action research seminar and outdoor activity as instructional methods in their teaching and learning. These methods are used in various courses. The assessment methods used are online tests and final test, most of the tasks are supervised and monitored by the lecturers.

*Ilia State University* uses PBL, PjBL, simulations of the lessons, „critical friends” model, blog of each student, class Edmodo, investigated group projects, interactive teaching methods and school practice as instructional methods in their teaching and learning. These methods are used in various courses. The formative assessment methods used are project portfolio, course e-portfolio, verbal and written feedback issued by lecturer, and intensive monitoring of group work and verbal and written feedback issued by lecturer.

*Ivane Javakhishvili Tbilisi State University* uses PBL, CBL, game-based learning and VaKE as instructional methods in their teaching and learning in the following courses: “Formation of Identity in Multicultural Environment”, “Multiethnic and Multicultural Georgia”, “Intercultural Education - Pedagogical Approaches”, “Children’s Rights in and Through Education”. Only tests and verbal comments are given and other formative assessment methods are not used in TSU.

*Samtskhe-Javakheti State University* uses PBL, PjBL, game-based learning, continuum, debate, Bono’s 6 hats and case study as instructional methods in their teaching and learning. These methods are used in various courses. The following formative assessment methods are used: portfolio. (instructional methods and tasks were reported as assessment tools).

*Sokhumi State University* uses PBL, PjBL, VaKE, CBL and heuristic method as instructional methods in their teaching and learning. These methods are used in various courses. However, formative assessment methods are not used in SSU.

*National Center for Teacher Professional Development* uses case study, interactive games, game-based learning, role-playing, media analysis, sketching to learn, modelling, interactive game “Migration”, proust questionnaire, image description, questionnaire – identification of violent actions, using of the reverse classroom method, comparing the historical sources and practical work as instructional methods in their teaching and learning. These methods are used in various courses. The following formative assessment methods are used: teacher's oral feedback, oral comments, Presentation assessed by lecturers, lecturer’s feedback.

Private University of Education of the Diocese of Linz, Austria uses PBL, VaKE and inquiry-based learning as instructional methods in their teaching and learning. These methods are used in various courses. The following formative assessment methods are used: discussion, peer assessment, participative assessment, viability checks of the following types: argumentative, peer, reflective and social.

Otto-Friedrich-Universitaet Bamberg, Germany uses PjBL, case-oriented learning, learning by teaching, added by frontal teaching and teacher-students-discussions, self regulated learning and flipped classroom with game based elements as instructional methods in their teaching and learning. These methods are used in various courses. The following formative assessment methods are used: measuring students’ perception of the learning environment: asking for emotional, volitional and cognitive states at particular points during the course; E-Quiz via audience-response system as check of students’ understanding and starting point for deeper discussions, peer feedback after students prepare statements for panel discussions and participate in a panel discussion in different roles, Mindmaps/Concept maps, poster presentation as a simulation of the final test, peer feedback, in between presentations, discussions, feedback of experts, cooperation with practitioners, regular e-Quiz throughout the semester, audience response systems to discuss students solutions, e-learning platform with video related quizzes, multimedia presentations and expert feedback from school teachers.

University College of Cork, Ireland uses online discussion boards, Twitterchat, Padlet posts, classroom assessment techniques, self-assessment, video introduction, peer review of teaching via blog post, personal reflection on Nearpod and reflective journal. The tools used are: online discussion board (VLE), Twitter, Padlet, choice of 50 cats to be drawn from e.g. one minute paper, muddiest point etc., students completed a self-assessment form prior to submission of assignment, video capture, discussion board and VLE, Nearpod and Word document.

Tallinn University uses PBL, PjBL, inquiry-based learning, case-based learning, flipped classroom, role play, weekly online discussions, context-based learning, game-based learning, seeking and evaluation of information sources, analysis and synthesis of the literature, virtual reality simulations, scenario-based learning, prototype design and modelling, reflective learning, crossover learning, learning through argumentation, analytics of emotions and learning through storytelling as instructional methods in their teaching and learning. These methods are used in various courses. The following formative assessment methods are used: online diagnostic analysis survey, buzz/brainstorm sessions, ePortfolio reflection, ePortfolio assessment & feedback, feedback system in the Study Information System (ÕIS), web-based peer assessment, personal vignette, reflective journals, project interim reports assessment, self-assessment, peer assessment, online progress quizzes, in-class discussions problem sets and case studies, three points summary, 1-minute reflection writing assignments, open online badges (or online visual icons), feedback based on video recordings, critical synthesis of discussions, reflective blogs, Mindmaps/Concept maps assessment, stealth assessment, interim bibliography assessment, interim literature review assessment, team observation, team-reflection, group feedback via Skype, learning agreements, reflective blogs, questioning strategies, rank and report assessment, pyramiding (snowball groups), assessment of group work and performance, self-assessment and self-diagnostic opportunities, the use of wikis and social network analysis (SNA).

**Some preliminary conclusions:**

1) Project partners define instructional methods (teaching and learning methods) and assessment methods including formative assessment methods differently. The methods that some partners use as instructional methods are presented by other partners as assessment methods. IL and GE partners at times, fail to discern between the instructional method and its assessment.

2) It seems that the project partners name the same assessment method slightly differently although the nature of the method might be the same.

3) The most used instructional methods by the project partners are problem-based learning (10 partners), project-based learning (8), case-based learning (8), game-based learning (gamification) (8), Value and Knowledge Education (VAKE) (7) and flipped classroom (4).

4) There are a variety of instructional methods which are only used by one or two partners.

5) The most used assessment methods for new learning environments by the GE and IL partners are quizzes and tests. Other popular methods are also teacher-cantered. Only a few GE and IL HEIs use tools that might be considered formative (e.g., Portfolio).

6) There are a variety of assessment methods which are only used by one or two partners.