Teaching-as-Research (TAR): Developmental framework

The following framework has been developed as a touchstone for program developers/instructors/facilitators as they develop the learning goals and evaluation plans for the participants in their programs. It is also meant to guide their own practice.

Guiding Questions	Conceptualization	Well developed understanding, systematic and ongoing action	Some understanding, moderate or irregular action	Cursory knowledge, minimal action
What is already known about teaching this concept(s) and /or this approach?	**Existing knowledge is the foundation on which new teaching approaches are built. [d]**	The practitioner provides rationale and evidence that the current teaching approach needs improvement and critically analyzes existing knowledge on teaching methods and ideas considered for adaptation.	The practitioner doesn't provide a convincing rationale or sufficient evidence that the current teaching approach needs improvement. The practitioner needs to analyze existing knowledge on teaching more thoroughly.	The practitioner doesn't provide any rationale or evidence regarding the current teaching approach. The practitioner does not critically analyze prior information about teaching methods and ideas.
What do I want students to learn?	**Learning Goals define what learners will be able to know, understand, and do.**	The practitioner describes well-defined learning goals that are measurable, appropriate, and based on existing knowledge.	The practitioner clearly defines her/his learning goals, but the goals are not obviously measurable or appropriate for the intended students, and lack a well-informed foundation on existing knowledge.	The practitioner understands the concept of learning goals but doesn't define any clear objectives for their teaching approach.
What evidence will I need in order to determine whether my students have achieved the learning goals?	**Assessment Plans determine if learners have met the learning goals.**	The practitioner develops assessment instruments that are clearly aligned with the learning objectives and provide both instructors and students with feedback about learning at various times during the implementation.	The practitioner develops assessment instruments, but he/she is not sure how to align them with the learning objectives. The instruments do not provide practitioner and/or students with sufficient feedback about learning.	The practitioner understands what assessment is but doesn't develop an assessment instrument that will inform her/his practice.
What will I do to enable students to achieve learning goals?	**Teaching Plans describe the activities in which the learner will engage in order to meet the learning objectives**	The practitioner presents a hypothesis connecting the teaching plan to achievement of the learning goals. The practitioner includes a teaching plan that details the sequence of activities in which students and practitioner will engage.	The practitioner provides a hypothesis that does not clearly connect the teaching plan to achievement of the learning goals. Their teaching plan is included but it lacks detail.	The practitioner does not know how to develop a hypothesis that links his/her teaching plan to the achievement of learning goals, nor does he/she develop a clear teaching plan.
How will I collect and analyze information to determine what students have learned?	**Evaluation uses assessment data to draw conclusions about the effective of ones teaching approach**	The practitioner collects, analyzes, and draws conclusions from data regarding student learning and the validity of their hypothesis.	The practitioner collects and analyzes data, but cannot draw any clear conclusions from it regarding student learning or the validity of their hypothesis.	The practitioner understands the concept of evaluation but doesn't analyze their data nor draw any clear conclusions from it regarding student learning or the validity of her/his hypothesis.
How will I use what I have learned to continue to improve my teaching?	**Reflecting and iterating allow practitioners to improve to their practice**	The practitioner engages in a "full inquiry cycle" and makes further changes in her/his teaching practices based on the data analysis	The practitioner engages only in parts of a "full inquiry cycle" and makes few changes in his/her teaching practices based on the data analysis.	The practitioner engages in only a part of a "full inquiry cycle" and makes no changes in her/his teaching practices based on the data analysis.

Definitions of developmental stages

The descriptions below define each development stage in the framework.

Developed understanding, systematic action
   Practitioner increases his/her knowledge and understanding of the impact of concept on participant's learning. He/she takes action based on this increased understanding, evaluates the actions and improves his/her practice based on these evaluative data.

Developed understanding, moderate or irregular action
   Practitioner has some knowledge and understanding of concept based on personal reflection and external sources of information. He/she understands this in the context of his/her own teaching/outreach situation and acts on this knowledge.

Cursory knowledge, minimal action
   Practitioner makes elementary changes to teaching/outreach practices based on limited information and with little understanding of why he/she is making the changes.

Illustrative narrative

Existing knowledge is the foundation on which new teaching approaches are built.

a. *Developed understanding, systematic action*
Practitioners at the highest level demonstrate clearly what references were used in developing their approach, including scientific content, teaching challenges, teaching methods, and ideas used for adaptation. They provide a rationale and/or evidence that supports the idea that this teaching approach needs to be improved, which may come from the literature or from one's own evaluation data. Practitioners give evidence as to why a particular teaching approach was chosen.

b. *Some understanding, moderate or irregular action*
Practitioners at the mid-level provide references without a clear description of their relevance; some references are omitted or insufficient. Practitioners provide little or no rationale and/or evidence to support the idea that this teaching approach needs to be improved. Practitioners give little or no evidence as to why a particular teaching approach was chosen.

c. *Cursory knowledge, minimal action*
For practitioners at the lowest level, it is not clear that the literature is being used to address a change in teaching practice. Practitioners include few or no references. Practitioners provide no rationale and/or evidence to support the idea that this teaching approach needs to be improved. Practitioners give little or no evidence is given as to why a particular teaching approach was chosen.