Daily Formative Assessment in Undergraduate Medical Training: construction and presentation of an instrument

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ABSTRACT

The objective is to present a daily attitudes and professionalism assessment instrument for medical students in theoretical-practical activities. The development of the instrument was based on the manuals of the program for student integration with the community, on the program's pedagogical project, and on the National Curricular Guidelines for Undergraduate Programs in Medicine, and was carried out by professors. These were consulted in weekly 50-minute meetings held between August and November 2016. At the end of the process, a version of the instrument was consolidated with five items and six descriptors to discriminate learning situations that enable competency-based assessment from the simplest to the most complex level. With the use of the instrument, points considered important in medical training in theoretical-practical activities cannot be overlooked.

Keywords: Educational assessment, Feedback, Medical schools, Academic performance.

INTRODUCTION

Competency-based education presupposes a curricular organization that balances and alternates the acquisition of knowledge with the development of necessary skills and attitudes, in order to promote efficient and effective performance of activities required in the work setting. The assessment system consistent with this model adopts formative assessment in symmetry with summative assessment. Formative assessment is based on information collected in the learning process so as to trace the needs for adjustment in teaching[1], while summative assessment is carried out at the end of each stage and consists in verifying whether students have acquired knowledge to advance to new stages of the learning process[2]. Summative assessment is indicated as assessment of learning, whereas formative assessment is indicated as assessment for learning[1]. The interest in learning how students apply knowledge is more important than its classification within a normative group. Thus, it provides for integration and alignment of teaching-learning methodologies, educational practices, learning settings, and assessment methods, from a new perspective of academic advisory and vocational training[3].

The assessment should be characterized as a comprehensive, permanent and dynamic process, which implies critical reflection on practice, in order to examine advances, resistances, difficulties, which facilitates making decision and overcoming obstacles[4]. The purpose of formative assessment is to configure students' school performance in their cognitive, psychomotor and affective aspects[5].

Formative assessment must have students' active intervention, either total or partial. In the first case, self-regulation[6]; in the second case, a process triggered by teachers — for example, with the provision of *feedback*[7].

Workplace-Based Assessment (WBA*)* has also proven an important strategy to support competency-based medical education. It consists of methods to gather evidence of professional competency and behavior that can be observed in clinical settings.They consist of actual assessments in daily activities of competencies that physicians must have when providing patient care. This strategy can play an important role in providing *feedback* to students and serving as a support for learning[8,9].

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Despite numerous achievements indicated by the assessment — of skills and attitudes, teachers report too many barriers to perform it: be it the number of students per class; extension of the curricular program; difficulty in finding challenges appropriate to the needs of students. The challenges for applying this assessment include the difficulty in deconstructing the measurement of cognitive performances, carried out based on the traditional methodology. It is necessary to evolve to experiments that involve the assessment not only of "what" but of "how" one learns. Another point is how students' grades are reported, as assessment results are typically presented as norm-referenced (which describes student performance relative to peers, for example sufficient/insufficient), as opposed to formative assessment, which proposes "criterion-referenced" grades (which describes student performance relative to a target), as they help students fill learning gaps and achieve goals[1].

OBJECTIVES

The purpose of this article is to present an instrument for daily assessment of attitudes and professionalism geared toward medical students who are in theoretical-practical activities in the community, following an analysis of the experience of using this instrument.

THE INSTRUMENT

The Undergraduate Program in Medicine of the University of Franca has eleven years of existence, is coherent and resulting from the adoption of active teaching-learning methodologies, centered on students, with the teacher as facilitator of the processes. It uses pure *Problem Based Learning* (PBL) process for tutorship, among other active methods for other activities, introduced since the establishment of the program.

For medical training, there is a program for student integration with the community, which starts in the first semester of the program and aims at students' early contact with health care activities in social and health care facilities, which promotes integration with the routine of teams. In this context, the students' involvement in the structuring and monitoring of care for the health needs of the community; provides multiprofessional and interdisciplinary teamwork, together with professionals from the public health care network, from health care services, and the community of the reference area.

In this program, students should acquire interpersonal skills that enable working in a group, larning about, analyzing and reflecting on the main health issues of a given community; develop alternatives to solve or minimize the health issues of this community, develop ethical and professional behavior respecting the individualities and peculiarities inherent to each activity/person; develop critical and creative activities in relation to the professional performance of the physician; present a leadership attitude when relevant; and develop assertive communication with the community, team and colleagues. These points described above are cross-sectional learning objectives focused on from the first to the eighth stages of the program. Cognitive contents are diversified at each stage, consisting of family, child, woman, adult, elderly, worker and mental health. The operationalization of the program meets the format of one teacher for every seven students, approximately, which favors a learning strategy based on active methodologies, as well as its assessment.

The faculty of the program for student integration with the community has training in different fields of knowledge (physicians, psychologists, nurses, physiotherapists, nutritionists and dental surgeon). This group of teachers received professional training on active methodologies and assessment of learning to enter the program. Continuing training is held periodically for new teachers.

The performance assessment instrument initially used in the program was that adopted at Universidade Cidade de São Paulo (UNICID). It was used as reference because it consists with the current curricular proposal and the National Curricular Guidelines for Undergraduate Programs in Medicine (DCN). This instrument was used from 2012 to 2016 and with familiarity it was possible to detect some limitations of use for the program setting and new demands detected. In June 2016,

a commission with four teachers was created to review and propose the modification of the instrument. This new version of the instrument condensed the number of domains from 10 to five, aiming to reduce its length and time of application. The modification also clustered semantically close concepts with little discrimination. The instrument's score started from five points and did not reflect low student performance. The new version adopted grading from zero to 10 for each domain. This version modified as to the number of domains, graduation and semantics of the domains and descriptors was revised. This process was carried out during the weekly 50-minute pedagogical meetings, between August and November 2016, in which the debate of each item occurred collegially among the teachers of the program for refinement of the instrument.

At the end of the process, a version of the instrument was consolidated with five items and six descriptors to discriminate situations that enable competency-based assessment from the simplest to the most complex level. This instrument, called Medical Student Performance Scale (EDE-MED), was used from 2017 to 2022, in daily activities of the program for student integration with the community, by teachers from the first to the eighth stages. Currently, the instrument is under study as to its validity and reliability.

Chart 1 shows the instrument with five items and six descriptors for each item. Items can be graded from 0 to 10, according to the situation observed by the teacher, and classified according to the descriptor, which would indicate the student's grade in that item. At the end of the activity, it is possible to obtain an average between the scores of the five items, which represents the final score in the assessment of the day. At the end of the stage, it is possible to obtain an average of the assessment scores for that period.

The assessment of attitudes and professionalism is applied in all activities of the program. The classification in the descriptor is converted into a grade and recorded in an Excel spreadsheet by each teacher, in relation to their respective students, obtaining the daily averages and, later, the general average for the stage (Chart 1). The program's pedagogical project adopts the numerical system for passing or failing students. Valuing their attitudinal process, beyond cognitive aspects, the pedagogical project also provides that, for students to pass, there must be 50% summative assessment and 50% attitudinal assessment. To this end, the instrument descriptor is translated into number according to the student's performance and constitutes the final average. The group and individual *feedbacks* are largely supported by the criteria of this assessment.

REFLECTIONS ON THE USE OF THE INSTRUMENT

The use of this instrument developed, in line with a new methodology, led to uncertainties and doubts in its initial period of implementation. Most teachers, with previous experience in other programs with traditional methodology, had doubts about the efficiency of an active methodology in courses in the health area and about the assessment of attitudes. It was not uncommon to hear: "But shall we give free grades to students?", "These students will be approved effortlessly, as they earn a grade in all classes," "Isn't it too much to assign 50% of the stage grade to the attitude assessment?", "Are we going to increase the weight of the test?" The climate of uncertainty was a characteristic of the initial use of the instrument. According to a few teachers, this form of assessment represented a good pedagogical proposal and was viewed with enthusiasm. According to students, having recently come from high school, being assessed every class sounded like an extremely stressful factor. Most experienced the need to adapt to the active methodology, being protagonists of the learning process, and also be assessed daily beyond cognitive processes. They would typically say: "But I can't miss any class because I will lose a grade," "Teachers evaluate everything we do," "Now, in addition to knowing, we have to talk, I'm too shy," "I'd rather just take the test." Reasons for going back to the traditional assessment model were not lacking. The program coordination remained consistent with the pedagogical project and medical training guidelines and supported the proposal.

With the continued use of the instrument, teachers and students gradually perceived some

nuances of attitude assessment. Teachers began to realize that good use of the instrument, in conjunction with *feedback*, favored student engagement in the program and that it could really foster the indication of attitudinal aspects recommended in medical training. Students began to realize that being constantly assessed decreased the apprehension and pressure that tests could represent, in addition to favoring an open dialogue with teachers about their learning process.

A constant situation experienced in the daily practice of attitude assessment is that students, when receiving *feedback* from the assessment, immediately ask: "But what is my grade?". The tradition of receiving a grade, experienced throughout school life, is very rooted in the academic condition

Chart 1 – Daily attitudinal assessment instrument for activities in the community. Franca – SP, Brazil, 2022.

Scoring	0	1–2	3–4	5–6	7–8	9–10
Commitment to learning	When did not prepare activities proposed for learning. Arrives more than 10 minutes late.	When partially prepared the proposed activities, but is indifferent to activities and discussions.	When partially prepared the proposed activities and becomes interested after reinforcement by the teacher.	When prepared the proposed activities, but shows little understanding of the objective of the activity.	When prepared, understands the purpose of the activity, articulates it with previous theoretical knowledge.	When prepared the activity, articulates it with previous theoretical knowledge and other prohgram contents.
Initiative/ Motivation	Shows disinterest, does not participate.	Motivated to learning only because of grade. Participates superficially, without theoretical consistency.	Shows motivation in some periods and/or only in some activities.	Interested, but limited to the minimum, both in relation to learning and participation in activities.	Interested, attentive and participating, meeting the established proposals.	Proactive and engaged in activities, going beyond the established proposals.
Relationship between colleagues/team/ teacher/users	Does not interact due to disinterest and indifference.	Interacts with difficulty, even after stimulation. Shows no respect for others.	Interacts only after stimulation, shows respect, but with passivity.	Interacts appropriately after stimulation. Listens, respects, but needs to improve expression skills.	Interacts with relative ease, in a clear and pertinent manner. Has good ability for listening and expression.	Shows great ability to relate in various settings and situations. Respects and cares in an empathetic and assertive manner.
Attitude/ethics/ professionalism	Does not respect rules of conduct. Does not keep patient confidentiality. Does not fulfill commitments. Shows disrespect (prejudice and disregard to colleagues, teacher, team and users).	Shows very inappropriate behavior regarding norms, confidentiality, responsibilities, always requiring teacher intervention.	Shows attitude that oscillates between appropriate behavior regarding norms, rules and confidentiality, still requiring teacher intervention.	Shows ethical behavior (rules, confidentiality, responsibility in activities) in most activities with no need for teacher stimulation.	Shows ethical posture in planned activities, but lacks maturity for adequate professionalism.	Maintains ethical posture even in situations of conflict and adversity (unpredictable situations). Shows maturity.
Semiological skills and intervention skills (clinical, institutional, communication) to perform multiple tasks.	Shows total unpreparedness as to the skills expected for the stage.	Quite unprepared as to the expected skills in trying to perform proposed tasks.	Able to perform few expected skills, with insufficient performance.	Regular performance in most skills required in performing the proposed tasks.	Good performance in all skills required in performing the proposed tasks.	Excellent performance in the skills required at the stage. Shows excellent mastery in performing the proposed tasks.

and needs constant reflection with students. Often, students claim not to have received *feedback* if they are not given a grade. On the other hand, another concern is that teachers mischaracterize the assessment and make it a grade, devoid of reflection on the learning process.

It is important to emphasize that the operating format of the activities, characterized by small groups of students, strengthened the process of using the instrument, since large groups would hinder the assessment of five items with six descriptors for each student on a daily basis.

After this initial stage of implementation of the instrument and better acceptance of teachers and students, some other concerns came to light. One of them was that, even with an instrument that directed the assessment, the teacher's own characteristics, such as the level of requirement, still interfered with the evaluation. For example, on a given day the planned activity would be to recognize a health care unit regarding the physical structure, team and services. The fact that a student remains attentive, friendly, interested and collaborating albeit not asking questions should be considered an appropriate initiative? For some teachers, it meant good initiative, whereas, for others, it didn't. In order to try to align and further reduce this subjectivity, specific situations of the teachers' daily experiences were discussed in pedagogical meetings after activities in the community, in which the general and specific objectives of each stage were discussed to analyze the situation, which gradually favored better consistency between the teachers' assessments. This fact did not eliminate subjectivity altogether, but improved extreme disagreements. Another issue also observed is that, over time, teachers began to appropriate the instrument and reduced the consultation of the descriptors to assess students daily. Thus, they opened the Excel spreadsheet, looked at the *commitment* descriptor, and, for example, assigned a grade of 7, and so on. This issue also led to pedagogical meetings and reflections on teaching practice, favoring the reflection that it is not enough to have a good assessment instrument if it is not used as recommended.

Another aspect observed with the continuous use of the instrument is that the initial version used needed to be revised. The academic activities, which gradually adapted to the reality of the local community; and the perception of teachers about what would be a more appropriate attitude to the learning contexts, led to the need on the

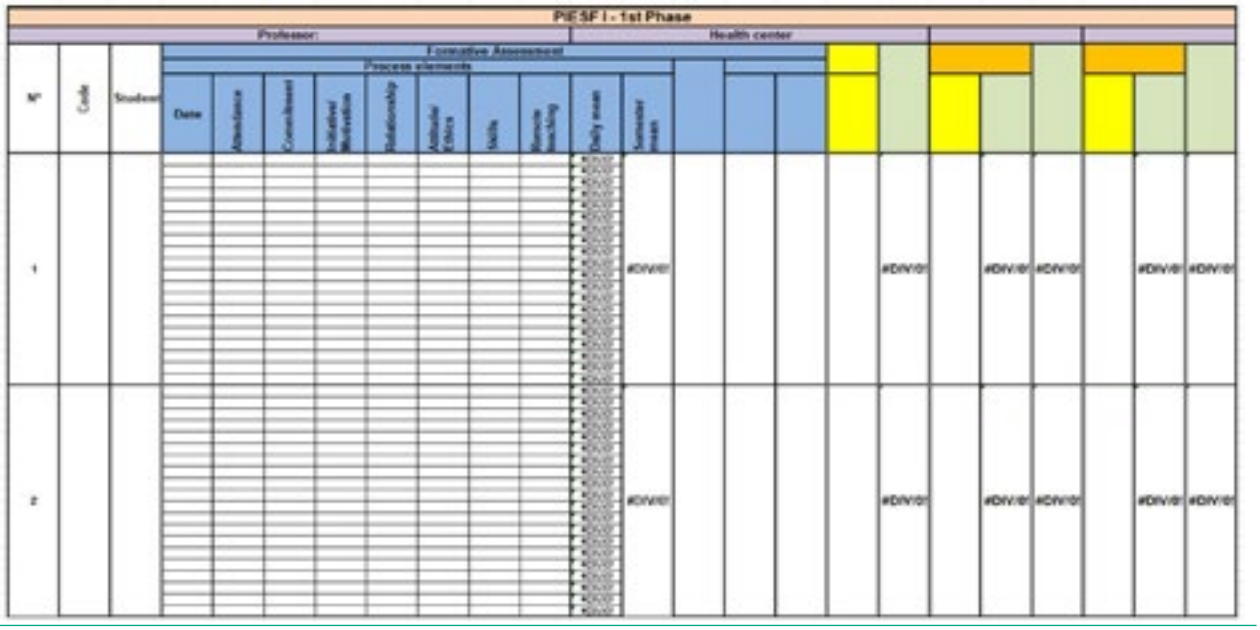

Figure 1 – Excel spreadsheet for recording grades of the attitudinal assessment. Franca – SP, Brazil, 2022.

part of teachers and coordinators of the program to readjust the instrument, which resulted in an updated version, presented in this article. Use of the new version showed that the instrument seems more appropriate and coherent with the program objectives, activities, and local community.

The path experienced in these twelve years was enriching for teachers and coordinators and enabled an interrelation with attitude assessment experiences described in the literature, as follows.

Here are some reflections on the terminologies 'measure' and 'assess.' 'Measuring' represents assigning values, according to an instrument in which data is obtained to be processed, while 'assessing' implies relating the measure to the analysis of the object under study, hence a more complex process[10]. Some articles present in the literature[11,12] propose to present measuring instruments, such as a scale. Many of these are validated, providing a reliable assessment of attitudinal aspects and skills; however, continuous and daily assessment is often unfeasible, either because of the quantities of items they present or the more detailed analysis of the instrument, which implies too much time. The use of an attitude scale would assist in monitoring this in undergraduate students, which would facilitate the investigation of attitudinal changes related to the impact of the curriculum and academic experiences[11] and should be used with an interval of time.

The process of assessing attitudes and professionalism can and should occur in all meetings, in order to promote attitudinal change, since attitudes can be taught and learned[11], which demonstrates the relevance of the instrument presented in this study, aimed at meeting this need for daily systematic assessment. In addition, the assessment of attitudes and professionalism can determine whether students have "acquired skills necessary to advance to new stages of the learning process"[13]. When performed daily, it can avoid classificatory perception with standardization of student behavior as good or bad. With the application of the daily assessment it is possible to notice how the learning process is dynamic, with the possibility of being more faithful to the student's performance on that day, becoming clear the potentialities, limitations and ability to adapt to the different scenarios of activities. Therefore, it avoids assessments that are limited to classificatory evaluations, a time of student penalization ignoring that assessment is inseparable from education and has the purpose of contributing to student progress[14].

Some difficulties regarding the assessment of skills and attitudes, such as having poorly defined objectives and lack of structured assessment instruments[13], can be mitigated with an instrument such as that described in this article. Use of the instrument makes clearer what is expected of students in terms of skills and attitudes, while assessing points considered crucial in medical training, in addition to enabling *feedback* based on clear criteria, in which even students, by reading the descriptors, perceive the favorable or unfavorable performance on that day.

Assessing — even with a supporting instrument — is not an easy task. The feelings experienced by teachers when carrying out an assessment include anguish and loneliness, often related to the sense of justice as to the grade given, concern for patients being cared for, and the student's future as a professional, with regard to attitudinal and ethical issues[13]. In addition, there is a concern with students being failed for attitudes when they have good grades in cognitive assessments, and also the students' constant competition for grades[13], which implies pejorative comparisons that contribute little to the learning process.

The issue of subjectivity is present in assessment processes, especially in assessments of attitudes and skills, and is always brought up by teachers and students. Even when using a structured instrument, there is still divergence when examining an experienced situation. This does not necessarily makes this type of assessment invalid. We must not forget that assessing means issuing a value judgment and, therefore, there is always a subjective component involved, which should not be denied or underestimated, but rather controlled[13]. As a means to expand and enhance the use of the instrument, critical incidents and situations involving ethical dilemmas are discussed in pedagogical meetings, which are held at the end of each activity with the presence of several teachers and have pedagogical supervision, leading to improved accuracy in the application of the instrument. This opportunity to

exchange impressions has alleviated the teachers' loneliness and feeling of helplessness, providing greater confidence and maturity to conduct assessments.

The teachers' lack of training and unpreparedness to assess[13,14], reluctance towards interpersonal conflict, and lack of commitment in not recognizing the importance of attitude assessment can be a serious impediment to quality assessment. Several teachers, trained in methods that favored cognitive assessment, have difficulty in assessing students individually, making a general assessment of the session, with no strategy proposed for students to improve the points criticized. Thus, the assessment may lose function and translate only into a grade. Having a structured instrument does not eliminates the constant need for training teachers for its use. Moreover, training teachers to provide *feedback* is a *sine qua non* condition for the effectiveness of the process. In practice, it is possible to perceive the enormous challenges to providing assertive *feedback*.

Some points should to be analyzed as to using the instrument, one of which is the grades of the descriptor related to attitude or skills being translated into a score. Although the assessment of attitudes assumes a summative component[15], which reinforces the culture of the grade, it is possible to demonstrate to the students, through the descriptor, the "steps" that would imply progress in their performance.

An interesting point is that the descriptors created in the instrument are generic, which enable their application in different situations, with flexibility of scenarios and proposals, ensuring the singularity of the subjects who are in action from the first to the eighth stage of the program.

Even though it is a succinct instrument, some teachers report not being able to apply it at the time they conduct the activity, which can imply loss due to errors in memory and to a tendency to give a reward or bonus to a given student due to personal affinity[15]. Therefore, advances in applying the instrument should be constantly considered, including the optimization of application time by employing technology, such as through the development of applications — a project conceived by the authors of this article. It was observed that teachers assessment is greatly facilitated by daily consultation of descriptors; hence, it is important to facilitate this process.

The arduous task of assessing attitudes and professionalism in undergraduate medical training requires a coherent pedagogical project, which recommends active methodologies as teaching-learning strategy, with investment in teacher training, change in academic culture for students coming from high school, mostly with traditional pedagogical proposal. Having an attitude and professionalism assessment instrument that is consistent with the learning objectives, proposed activities, and scenarios can significantly contribute to this process.

CONCLUSIONS

It is concluded that the instrument designed to assess attitudes and professionalism is an important resource to assist in this difficult task of daily assessing medical students in theoretical-practical activities. The benefits of using the instrument include reduced teacher subjectivity in the assessment, providing students with more effective *feedback* to build the desired competency in their training. Furthermore, the dialogue between students and teachers promoted by *feedback* will enable reflecting on the causes of poor performance and developing an intervention with appropriate instructions for improvement plans for students with poor performance.

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