Fachhochschule Nordwestschweiz
Pädagogische Hochschule

Basic voice check – a diagnostic tool for the singing class

First stage of development – 2015-2016

Background – first ideas for lesson development – the basic voice check – evaluation of audio recordings (iPad) & feedback to students

Background

A. General music education in Switzerland
B. 7th-9th grade – the end of compulsory schooling
C. One or two music lessons per week, a lot of singing
D. Significant differences in the training of teachers

What if?

Have you ever heard a boy try to hit the right notes in his puberty vocal change? For a student who tries, it's very stressful. But his teacher doesn't really hear it, because the girls sing so beautifully. Maybe he hears the less convinced boys who disturb the sound.

– What if the teacher could take better care of the voice of individual students?
– What if he knew how to deal with voices in puberty change?
– What if he could ground his lesson planning on diagnosis?

Pretest in a Bachelor Thesis – Petiti (2016)

In a pretest this was played through exemplarily.
– 44 students sent a chorus of a rehearsed song to the teacher.
– The student analyzed the audio samples and
– created three different programs for the lessons based on the singing needs.
– subsequent survey: students appreciated personal help

Literature Review

– Singing lessons in general music education (German speaking part of Europe) do not tend to reflect current trends in teaching development. Pezenburg & Dyllick (2018)
– Reminder from Welch (1994): Singing is personal, culturally diverse and complex. **It needs mindfulness!**
– There is a lot of current literature on **assessment in music education**, Brophy (2019)
– There is little literature in the field of formative assessment in the field of singing, but a need in diagnostic tools – Kastner & Shouldice (2016, p. 26)

«*To better support music teachers in implementing effective assessments, music teacher educators and researchers need to provide them with more tools that have been found to be valid and reliable ...*»

Current status of other test systems

A. AIRS-Test Battery – Cohen (2015)
– voice parameters, song singing, improvising, creativity
– no browser acceess
B. Seattle Singing Accuracy Protocoll – ssap.music.northwestern.edu
– psychometric test – Demorest & Pfordresher (2015)
– browser access (not working – March 13th, 2019)
C. GIA Music Assessment – giamusicassessment.com
– musicality test according to E. Gordon – (Gordon, 1991) – Hanson (2019)
– browser based paid service

Tasks for the whole class

Method

A. Infrastructure: iPad and iPad earplugs with microphone
B. Recording to playback on iPad alone in a separate room
C. Task:
– speak a sentence
– sing to a full playback
– sing to a piano playback
– sing to a rhythmic playback

Feedback

D. The teacher listens to the recording several times and
– fills in the analysis sheet of the basic voice check
– gives the students a feedback form with information on the next steps in their development
– plans lessons based on the evaluation of the data

First Implementation

– six classes with a total of 144 pupils
– execution within one lesson (two rooms - two iPads)
– 159 records, 18 not usable due to overdrive (too near to the microphone)
– preparation of data in Garageband (Apple)

Findings

– many data records with few abnormalities → no reason for testing
– comparison of the remaining analysis sheets by a singer, a teacher and the study leader → large rating differences
– attempt to adapt the analysis sheets → no common language and agreement on subjects could be found.

Interpretation – Conclusion

A. The first version of the basic voice check corresponds more to a laboratory situation, is not applicable in the classroom and uncomfortable for the students → access must be simplified (browserbased)
B. It needs a common language to assess the voice → a manual is required to develop expertise
C. A test that fits all doesn't work → who needs what kind of test?

the basic voice check needs development

Necessary steps for further development

– accessibility: browser-based environment
– time management: various and specific tests
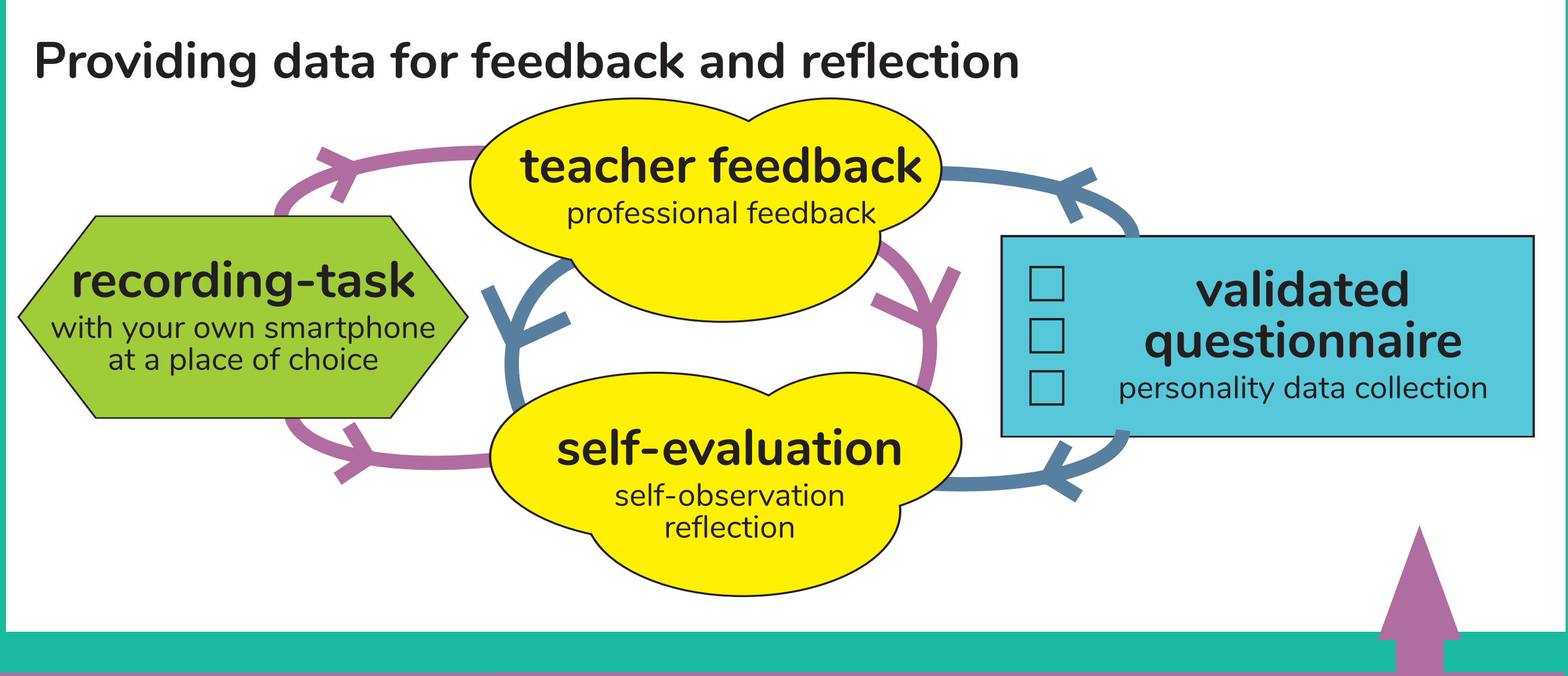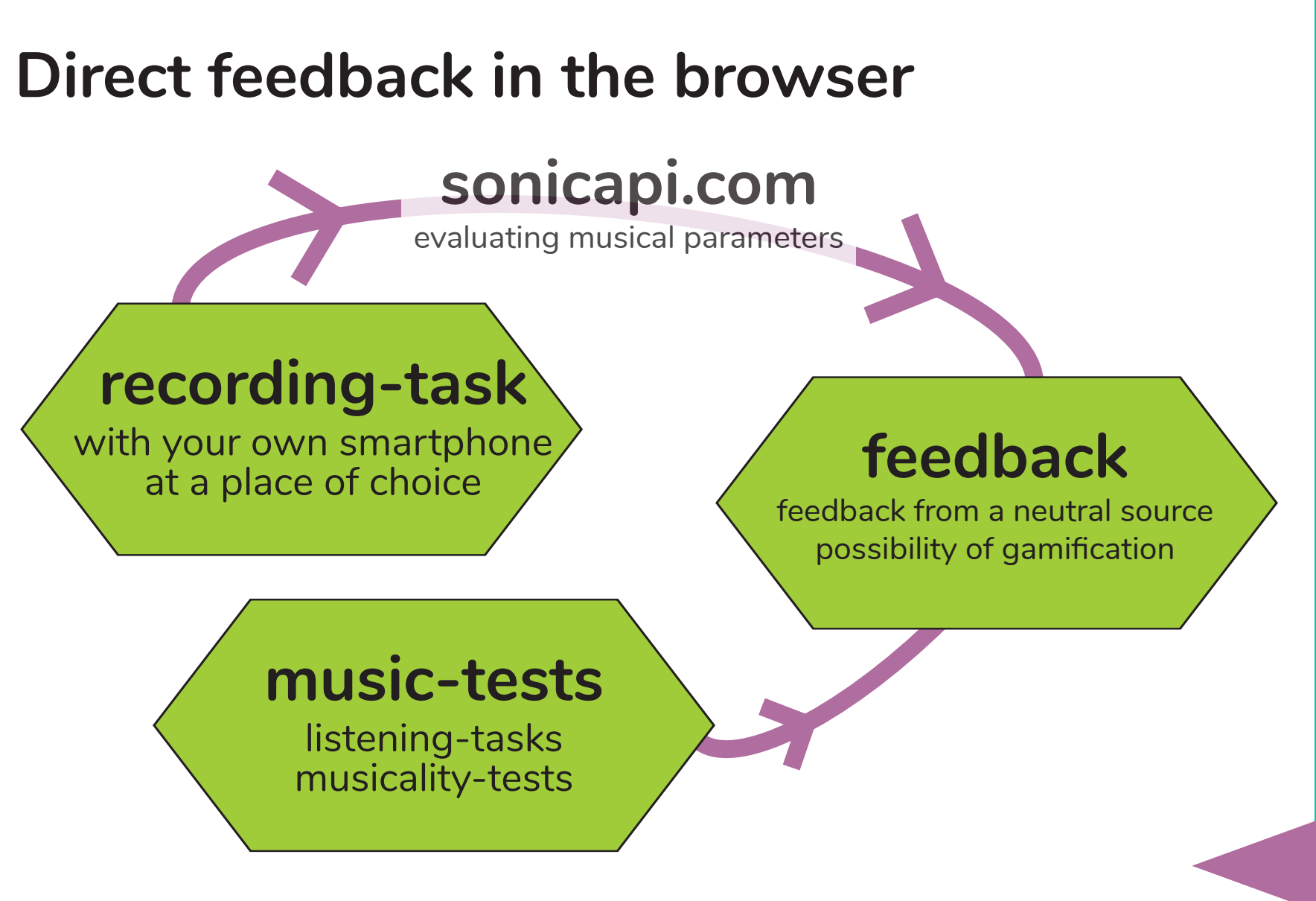– development of teacher expertise
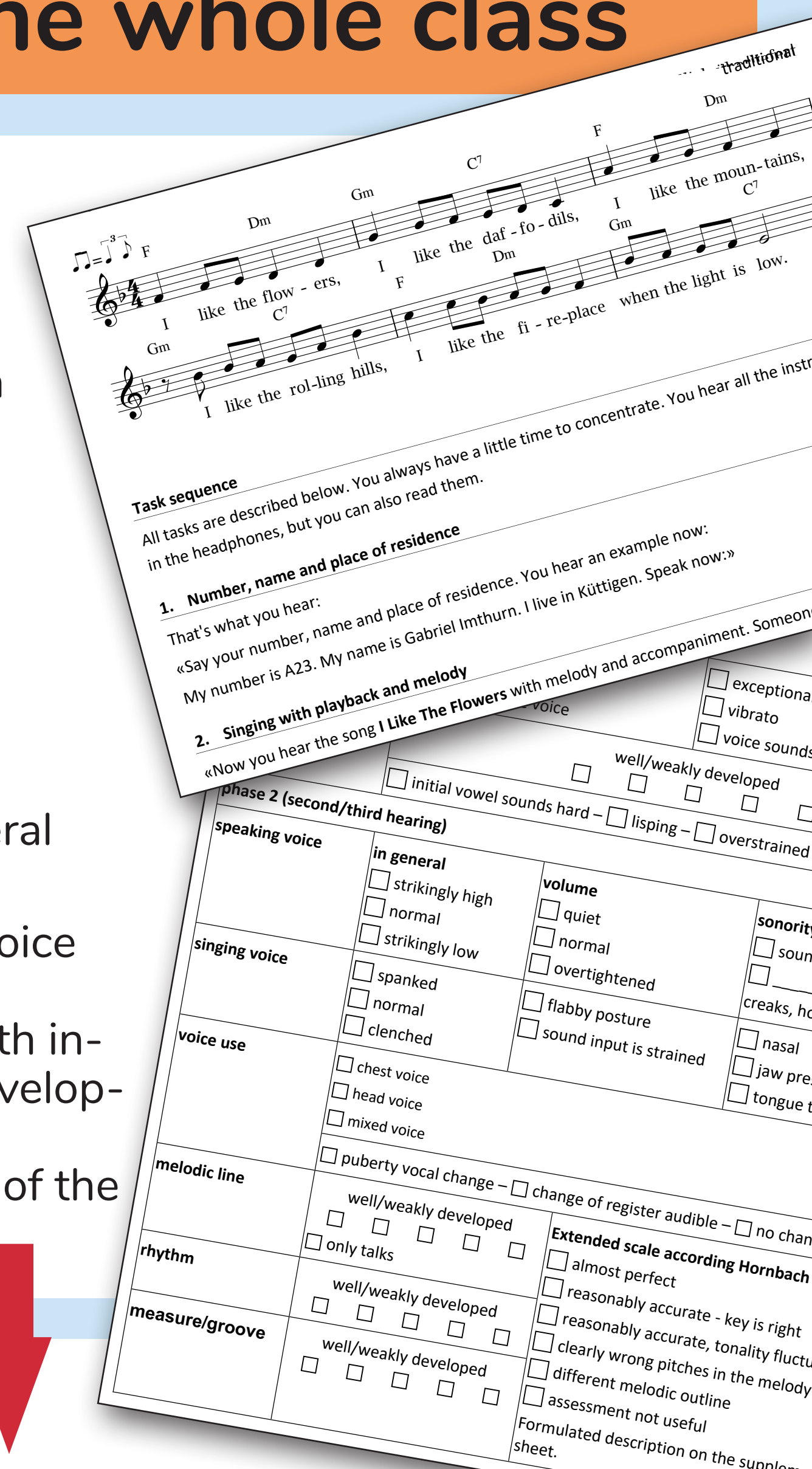
Second stage of development – 2018-2020

Browser-based test system with various evaluation options – feedback – building teacher-expertise

Individual tasks as needed

● Items from the first stage of development

Direct feedback in the browser

sonicapi.com
evaluating musical parameters

recording-task
with your own smartphone at a place of choice

feedback
feedback from a neutral source
possibility of gamification

music-tests
listening-tasks
musicality-tests

Providing data for feedback and reflection

recording-task
with your own smartphone at a place of choice

teacher feedback
professional feedback

self-evaluation
self-observation
reflection

validated questionnaire
personality data collection

Feedback from maschine

tone deafness
Smith et al. (2017)
Grassi & Soranzo (2009)
http://tonedeaftest.com/

voice pitch
finding boys speaking pitch
Gütay, (2012) – Ashley (2015)

singing accuracy
accuracy of pitch matching
Demorest & Pfordresher, 2015

ambitus tone holding time
Fuchs et al. (2016)

short melodies
Brother John
I like the flowerse
Cohen (2015)

?

musicality
https://giamusicassesment.com
Hanson (2019) – Gordon, (1991)

Teacher's expertise & self-evaluation

hoarseness & sick voice
awareness of voice problems
Fuchs(2015)
Brockmann-Bauser & Bohlender (2014)

rating scales
melodic/rhythmic competence
Hasselhorn (2015) – Wise & Sloboda (2008)
Welch et al. (1998) - Rutkowsky (1990)

speaking technique
articulation: vowels and consonants
natural speaking voice
glottis strokes
Brockmann-Bauser & Bohlender (2014)

vocal coaching
body tension
breathing technique
musical phrases

puberty vocal change
self-observation
changing sound & ambitus
identity building
Morrison (2005)

Teacher's manual

A. Building expertise
– content knowledge & paedagogical knowledge – Shulmann (1987), Puffer & Hofmann (2017)
– teachers often have too little know-how to classify voice problems adequately – Ashley (2015)
– the manual contains procedures and tips to help pupils – Kastner & Shouldice (2016)
B. Examples
– the manual provides suitable examples for typical voice colors and voice problems
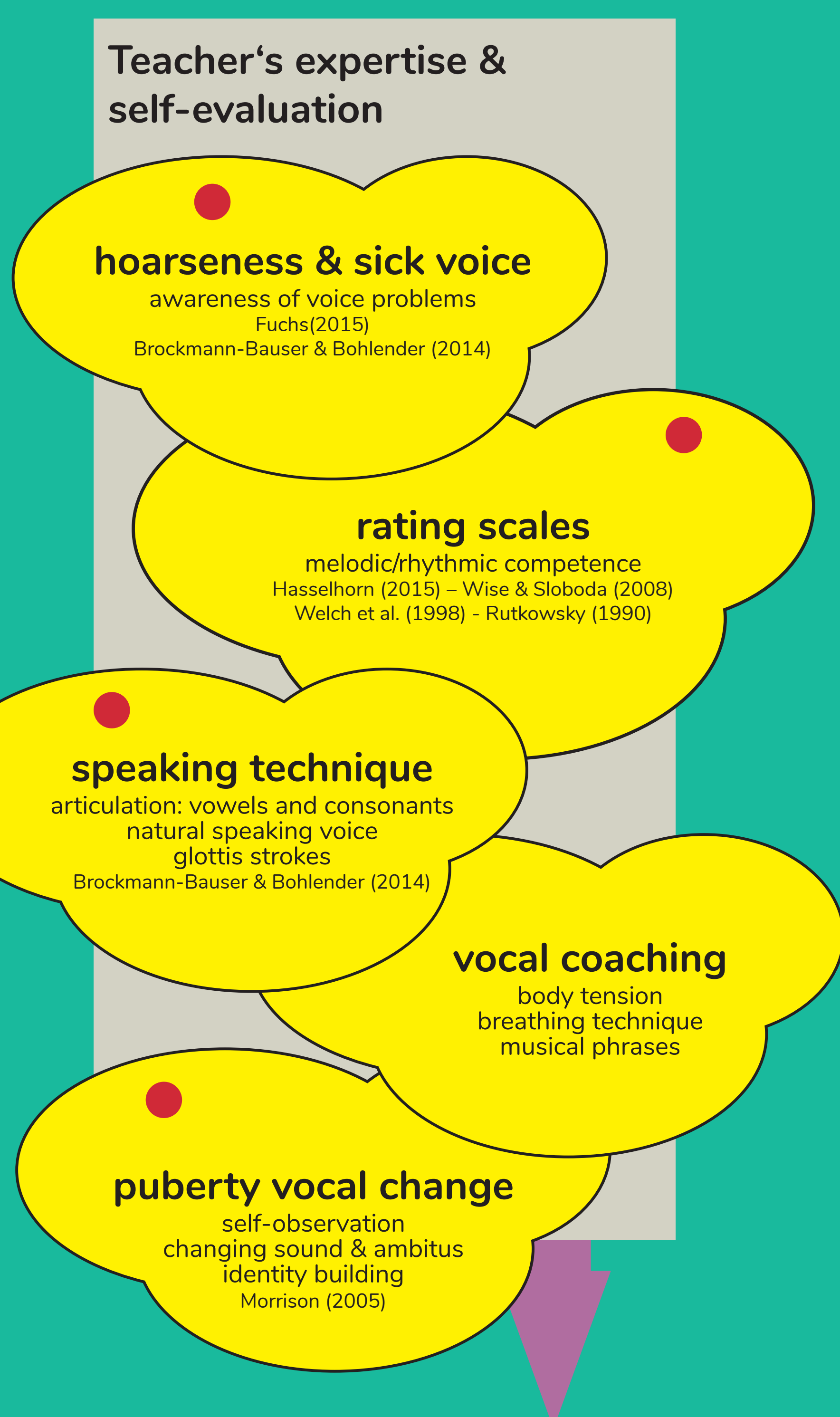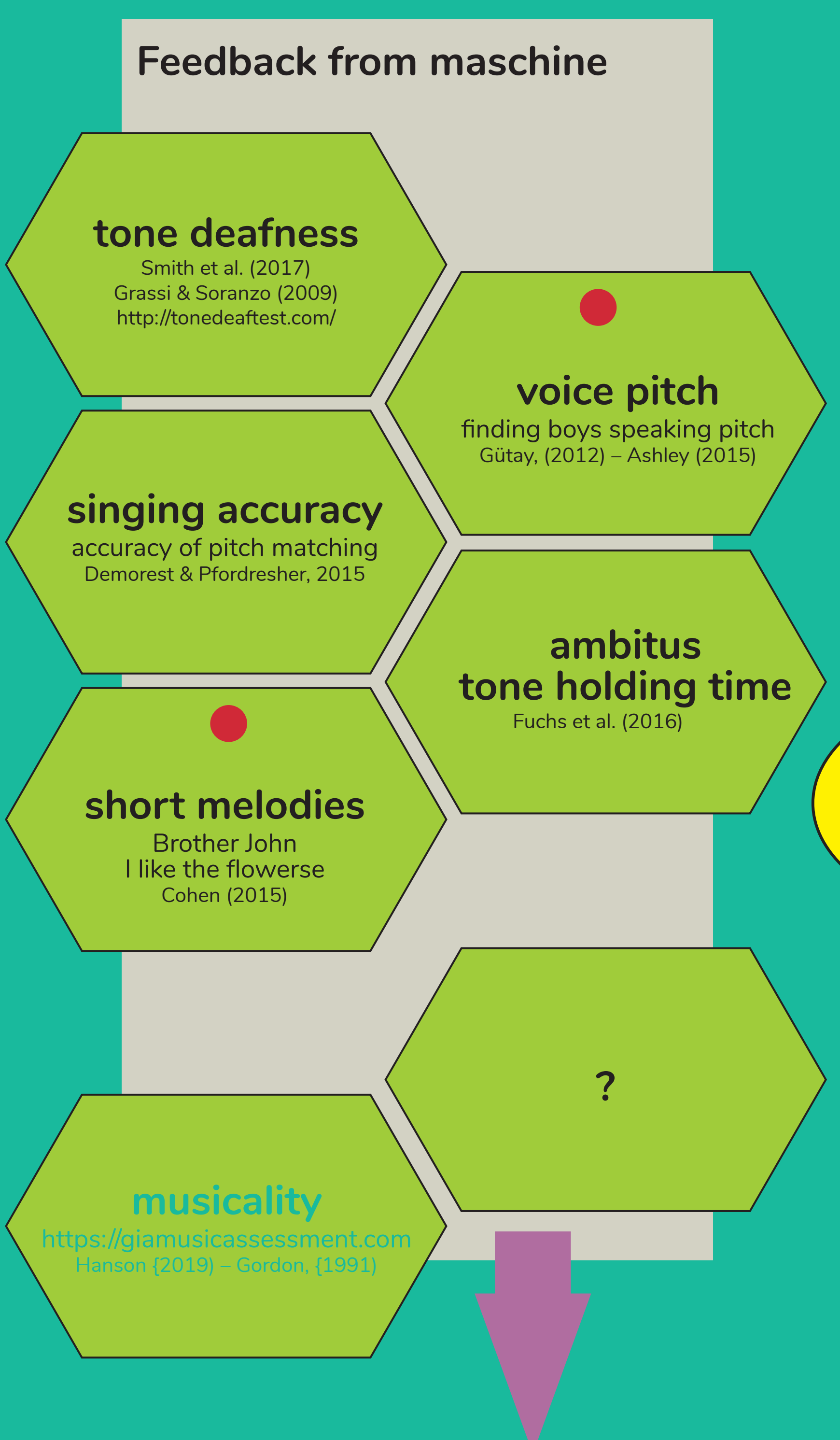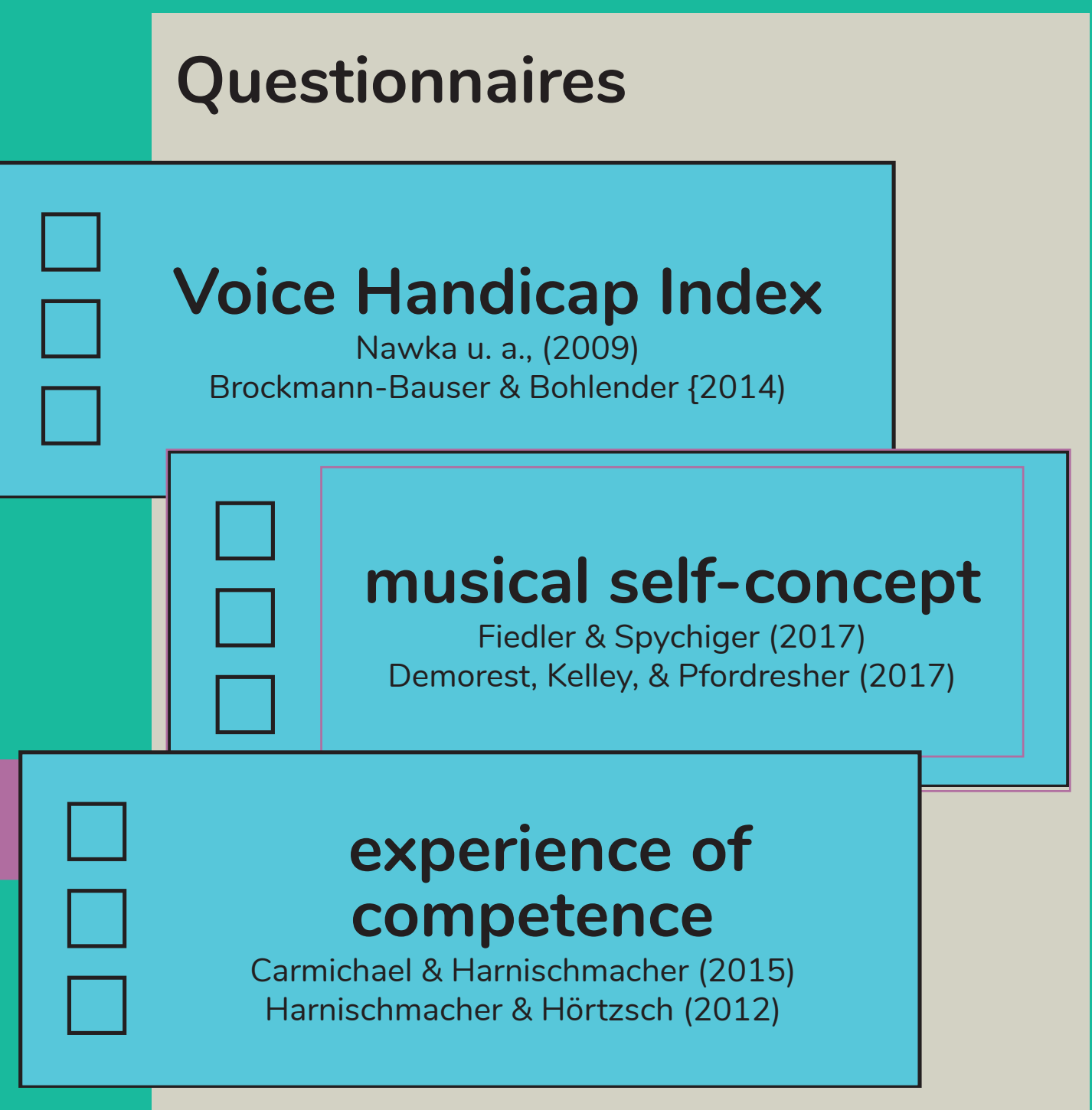
Usecase

Bruno is a new student who has moved from another place. Jonathan, his music teacher is not sure if the student is shy or if he really
doesn't hit the notes. After the music lesson he motivates him to do some tests on the website and then give him the right to look at the tasks.
A. After one week Jonathan welcomes Bruno and assures him that he thinks his voice is cool and that he wants to help him to join the group as soon as possible.
B. After a week, Jonathan asks Bruno if he has a - few minutes after the music class to discuss some exercises on how to improve his voice.

Questionnaires

Voice Handicap Index
Nawka u. a., (2009)
Brockmann-Bauser & Bohlender (2014)

musical self-concept
Fiedler & Spychiger (2017)
Demorest, Kelley, & Pfordresher (2017)

experience of competence
Carmichael & Harnischmacher (2015)
Harnischmacher & Hörtzsch (2012)

Different tests for different situations

A. All results on a timeline – visualisation of developments – Hattie et al. (2013)
B. Scalable accessibility for students and teachers

C. Teacher: coaching and accompaniment of vocal development – Lorna (2013)
D. Student: data Material for the own development portfolio – Morrison (2005)