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# Selected Typologies of Learners and Learning related to digital resources in singing lessons

## 1. Introduction

Theories of so-called learning types have become more and more popular during the past decades, in the German speaking countries[1] as well as in the USA.[2] There has already been an attempt at putting them into concrete terms within my own profession, the pedagogy of singing,[3] and it will be interesting to see what potential lies in that.

A lot of material on the subject has been published, and in this short work I cannot deal with all the different taxonomies and versions. For that reason, I limit myself to two theories that are most common and therefore most important: On the one hand typologies that refer to the preference of certain sensual channels (above all Frederic Vester's), on the other hand the theory of experiential learning by David A. Kolb.
After I have defined the limits of validity of these theories based on a survey of the literature, I would like to say something about how these thoughts can be translated into pedagogic action in singing lessons.

Before I begin with the theoretical description and criticism, I have to define some technical terms that are important for my conclusion: "learning type", "learning strategy" and "learning style".
The word "learning type" can mean two different things, either "types of learning" or "types of learners". In order to avoid misunderstandings, I will use that term in the latter sense in this work. Learning types in this sense are categories of learners[4] based on personal qualities that are fixed genetically or by education.
Learning strategies are patterns of action in learning situations,[5] they are approaches to meet the learning goal. They are not ipso facto personal qualities, but they can become habitual and thus a learning style.[6]
Learning styles are defined by the fact that a learning strategy is applied in different situations constantly.[7]

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[1] Looß p. 186.
[2] Sternberg/Grigorenko p. 2 et seq.; Hurst-Wajszczuk p. 421: "Interest in learning styles and their application in the classroom has skyrocketed in the past two decades."
[3] Hurst-Wajszczuk passim.
[4] Stangl (3), http://www.stangl-taller.at/ARBEITSBLAETTER/LERNEN/Lerntypen.shtml.
[5] Looß p. 189.
[6] Cf. Becker p. 76.

## 2. Learning typologies based on sensual channels

### a) Description

The most popular systems of learning types are based on different channels of perception. “Auditory” and “visual” are mentioned most frequently. As a third learning type we either have the haptic, kinaesthetic (especially in the American popular science)[8] or the physical type. Furthermore, there are the cognitive (resp. intellectual) and the verbal (or communicative) type.[9] Looß even reports of the assumption of an olfactory learning type.[10]

Frederic Vester is regarded as the first author of such a typology.[11] His theory is the most popular typology of learners in Gemany, first published in 1975. Discussing a practical example from a lesson in physics at school,[12] Vester differentiates four kinds of learners, namely the auditory,[13] the visual, the haptic and the intellectual. At a later point in the same publication, he enumerates five “big learning groups”, “the visual seeing type, the auditory listening type, the haptic feeling type, perhaps the verbal type and the communicative type.”[14]

### b) Criticism

There is a certain vagueness about typologies founded on sensual channels, even within Vester’s work itself (see above). He has checked his own hypothesis empirically and conceded in the end that, due to mixtures of preferences, there are as many learning types as there are learners.[15] He doesn’t go as far as doubting the existence and stability of these types. He just draws the consequence that lessons for a class should be methodically various in order to get access to each pupil (according to his or her personal learning type) and to anchor the information deeply.[16]

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[7] Looß p. 189.
[8] Cf. Cumming, http://www.youtube.com/watch?v=oNxCporOofo.
[9] Becker p. 75; cf. Sütterlin, http://www.philognosie.net/index.php/forum/message/901.
[10] Looß p. 196.
[11] Looß p. 186; Stangl (3), http://www.stangl-taller.at/ARBEITSBLAETTER/LERNEN/Lerntypen.shtml
[12] Vester p. 51.
[13] Nota bene: He or she “...seeks understanding by listening and talking...“ (Vester, ibid.) – an obvious equalisation of behaviour and channel of perception that sounds like rash thinking.
[14] Vester p. 121, transl. S. B.
[15] Vester p. 121; cf. Schrader p. 17; Sütterlin, http://www.philognosie.net/index.php/forum/message/901; her statement is though inconsistent with other passages like „find out which learning type you are“ (ibid.).
[16] Vester p. 124 et seqq., p. 51.

These admissions are nevertheless insufficient. Looß analyses Vester's theory and finds for example that he mixes perception (auditory, visual, haptic types) and cognitive processing (intellectual type). The classification of learners is not systematic in the first place.[17]
Furthermore, she reflects on practical teaching and sees a fundamental difference between the explanation of the teacher and the perception of the pupil, where Vester equalises both.[18] Looß shows on the basis of Vester's own examples that the illustration of a physical law cannot replace the intellectual explanation.[19]

In her article "Hirngespinste der Pädagogik" ("wool-gathering of pedagogy", transl. S. B.), Becker states, perhaps a bit oversimplified: "There is no research on learning types".[20] With explicit regard to Vester, Becker comments that he does not refer to a single neuroscientific source. She follows up with her principal criticism of the concept of learning types: "Learning is, just like perception, a complex process that cannot be limited to one sensual channel." In the end, learning type tests are deficient, too, because of their lack of reliablity and validity.[21]

Stangl and Looß share the opinion that there is no evidence of higher individual success of pupils depending on the consideration of different channels of perception.[22]
One major argument against this idea is that human beings perceive stimuli mostly with their eyes, irrespective of individual variances. Stangl gives the following numbers (however, with suspiciously round lots): In average, a human being would perceive 10.000.000 bits (i. e. units of information) per second visually, 1.000.000 bps haptically, 100.000 bps auditorily, 10.000 bps olfactory and 1.000 bps through the sense of taste. Stangl stresses the outstanding importance of the visual sense, that in his view defines man as an "eye animal".[23]

In her private online-publication, Sütterlin reports the common "knowledge" that humans would remember 10 % of what they read, 20 % of what they heard, 30 % of what they saw, 50 % of what they heard and saw, 70 % of what they spoke out and 90 % of what they

[17] Looß p. 187.
[18] Vester p. 51.
[19] Looß ibid.
[20] Becker p. 76.
[21] Becker p. 76, transl. S. B.
[22] Stangl (2), http://arbeitsblaetter.stangl-taller.at/TEST/HALB/theorie.shtml, Looß p. 190.
[23] Stangl (1), http://www.stangl-taller.at/ARBEITSBLAETTER/LERNEN/Lernstrategien.shtml:
„Aus dieser Übersicht kann man die überragende Bedeutung des visuellen Systems erkennen, das den Menschen vor jeder Sinnespräferenz als Augentier definiert."

executed in hands-on activity. On her own website, readers opposed and marked this statistic as a "naïve assumption".[24]

Looß refers to these numbers, too and regards them benevolently as "presumably empirical", not without noting that the source of these figures cannot be found.[25] Still, they are given without differentiation of certain types, just like in the old Confucian wisdom: "Tell me and I'll forget. Show me and I'll remember. Involve me and I'll understand."[26] This indicates the existence of a traditional consensus among many pedagogues that a classification of pupils is not relevant for their teaching.

We have seen now that general human conditions superimpose any differences between individuals or classes of individuals here. Another factor is the specific sensual preference due to the learning situation or the specific content. For example, Sütterlin admits that something like "tying one's shoes can only be learnt physically, even if you are a visual type."[27]

Even more, we have to insist on the difference between mere memorising and actual learning connected with understanding - that is in fact sometimes neglected in reproduction oriented learning environments at school.[28] It is a naïve assumption that sensual impressions are transferred into the memory directly. The neurophysiological as well as the psychological process is much more complex. Learning is more than memorising, it always demands dealing with the material on an intellectual level,[29] an active assignment of meaning.[30] Sensual perception is a precondition, but learning itself is a cognitive process.[31]

One more differentiation is necessary in order to get rid of a common misunderstanding. It is not adequate to assume that "visual learners" would be equally fit for processing pictures and written information. Both are basically different from the perspective of cognitive science. Writing represents information in a symbolic way, a picture analogue.[32] It would be totally wrong to classify a vocal student as a visual type and confront him or her with "images", i.e. metaphors communicated by words to support his singing technique or musical phrasing. The

[24] Sütterlin, http://www.philognosie.net/index.php/forum/message/901,
[25] Looß p. 193; Stangl, however, has done elaborate researches on the history of this statistic, Stangl (1), http://www.stangl-taller.at/ARBEITSBLAETTER/LERNEN/Lernstrategien.shtml.
[26] Cf. Stangl (2), http://arbeitsblaetter.stangl-taller.at/TEST/HALB/theorie.shtml.
[27] Sütterlin, http://www.philognosie.net/index.php/forum/message/901, transl. S. B.
[28] Looß p. 195.
[29] Becker p. 76.
[30] Looß p. 189; cf. Willingham, http://www.youtube.com/watch?v=sIv9rz2NTUk: "Learning is meaning-based".
[31] Looß p. 192.
[32] Looß p. 190.

perception of words is auditory, the content symbolic-abstract, the context is communicative, the inner imagination perhaps visual, but the perception of the body is kinaesthetic and the sound product is acoustical. There is no reason why a "visual learner" should benefit from this.

Learning typologies do have a certain validity as far as pure learning by rote is concerned and the content is facts (declarative knowledge). Applicable procedural knowledge and complex issues necessitate more cognitive processing that is independent of the primary perception channel.[33] Vester has neglected that difference completely,[34] not to mention further elaborations e.g. of the experimental memory psychology according to Engelkamp.[35]

One could ask wether singing lessons could be regarded as reproduction oriented and be based on sensual channels, at least partially. But the study of movements and music does not only have the purpose of reproduction, but also of application on other pieces. The interpretation of a piece of music is a derivative but still creative process, the singer must be motivated intrinsically to have a poised independence in dealing with the material. This can only be achieved by understanding the background, and a prerequsite for this is learning with understanding, not mere memorising.

Additionally, the communication channel is mostly indicated by the content (you cannot see tones, you cannot hear written notes). From this circumstance alone, obstacles against an observance of different learning types will result.

Still, it could be possible to find more truth and practical applicability in classifications that deal with other factors than sensual channels, that are more differentiated and thus appropriate to the complexity of the learning process. We shall see that in the next section that covers an important and popular example.

[33] Looß p. 188; Stangl (3), http://www.stangl-taller.at/AR BEITSBLAETTER/LERNEN/Lerntypen.shtml.
[34] Looß p. 189.
[35] Seel p. 38. Engelkamp differentiates the explicit and the implicit, the sensorical and the motoric, the verbal, the declarative, the semantic and the procedural memory. For each of these part systems, the relation between sensual impression and learning performance should be examined in order to find sustainable correlations.

## 3. Kolb's theory of experiential learning

### a) Description

David A. Kolb's learning theory[36] has different sources. Kolb made John Dewey's pragmatic approach that experience is the basis of all learning his own. The concept of adaptation to the environment is based on the developmental psychology of Jean Piaget. From Kurt Lewin he adopted the model of a "cycle of action",[37] transforming it into the cycle of learning described below.

On the basis of these ideas, Kolb created his "Experiential Learning Theory", marked by the following qualities: [38]

- Processuality (non-static)
- Experience as the origin and material for learning
- Four polarised modes of learning
- Holistic adaptation of concepts
- Transaction between individual and environment
- Constructivist tendency

Kolb defines learning as "the process whereby knowledge is created through the transformation of experience",[39] expressing the connection between experience (perception) and cognitive processing, whose lack was criticised in Vester's model earlier. Kolb differentiates both systematically.

The four polarised modes of learning mentioned above are given in two dimensions:[40]

1. Perception continuum

   This one deals with the opposition of concrete experience ("apprehension") and abstract conceptualisation ("comprehension").

[36] Kolb passim; cf. Sternberg/Grigorenko p. 16 et seq.
[37] Staemmler p. 46 et seq.
[38] Lehmann p. 46, Staemmler p. 48.
[39] Kolb p. 41.
[40] Staemmler p. 49.

2. Processing continuum

Here, Kolb polarises active experimentation ("extension", the inductive way of insight) and reflected observation ("intension", corresponding with the deductive way of thinking).

Learning is presented by Kolb in the form of a cycle. A concrete experience is followed by a reflection of that impression. The reflective observation results in a hypothetic abstract concept, that is tried and tested by active experimenting. From these experiments, the individual gains new experience, and the cycle of learning starts anew. This theory can be illustrated like this:

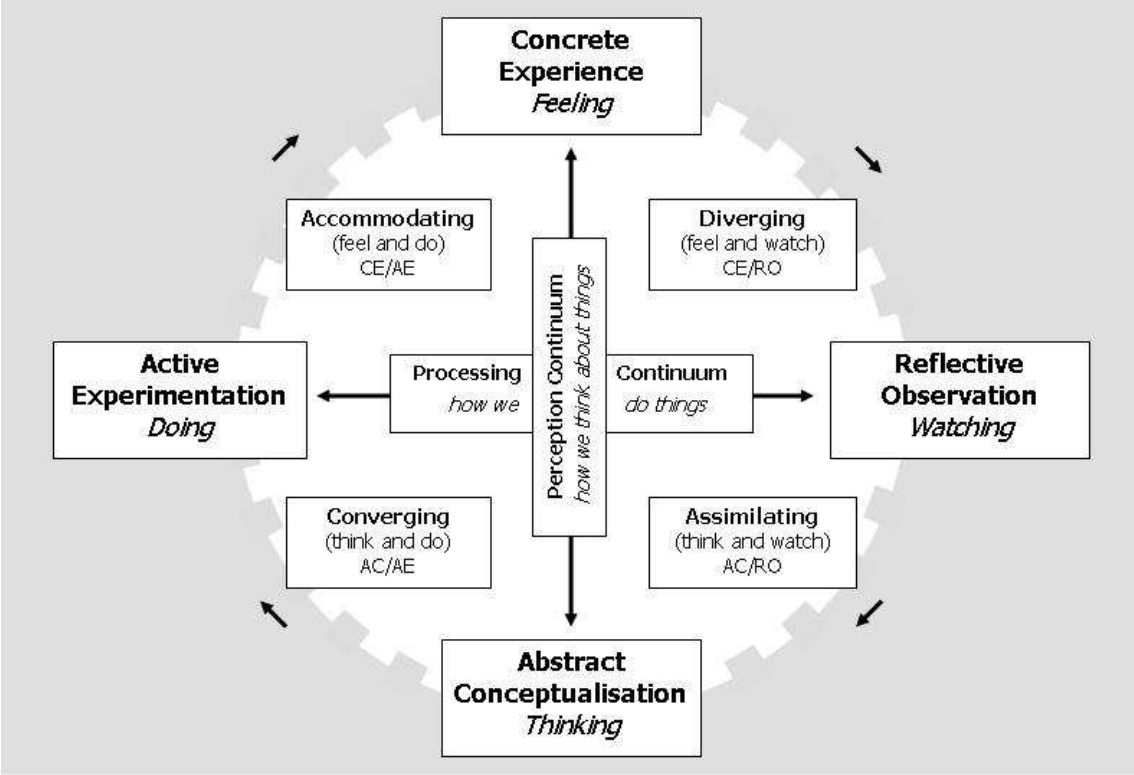


Illustration 1: Kolb's Cycle of Experiential Learning[41]

Here we can see how Kolb combines four learning types, each from two modes of learning:[42]

- The diverger from concrete experience and reflective observation

He or she is very communicative. Kolb postulates that this type fits in professions with a social or artistic profile.

[41] Kolb p. 42
[42] Kolb p. 76 et seq.; cf. Staemmler p. 52 et seq.

- The assimilator from reflective observation and abstract conceptualisation
The assimilator is gifted to be an analytic in the research or financial field.

- The converger from abstract conceptualisation and active experimentation
This one is a typical executor of plans, the working mode e. g. of an engineer.

- The accommodator from active experimentation and concrete experience
This type seeks experience in action and can often be found among businessmen.

Kolb himself points out that his learning styles are not fixed traits of character, but individually "programmed" orientations.[43] Their application depends not only on genetics and socialisation, but also on the actual situation.[44]

By further reflections, this relatively simple system is broadened significantly.[45] Kolb believes that the individual repertoire of learning strategies can be extended. Preferences in one or the other dimension can diminish in onesidedness, the learner can use both modes of either perceiving or processing. By this, four new types emerge that would be mapped on the axes of coordinates according to the remaining preference: the "Northerner" (balanced in processing, but still prefering concrete experience to abstract conceptualisation), the "Southerner" (prefering abstract conceptualisation), the "Easterner" (reflecting observer) and the "Westerner" (active experimenter).[46] In a third stage, this process extends to the remaining dimension, and in the end, the ideal of the ninth type called "balanced learner" is achieved, who would belong on the origin of the axes on the diagram.[47] This one has developed his or her competences in a way that he or she can learn equally in all four phases of the cycle.

b) Criticism

Kolb unfolds his premises in a consistent deductive way, and his theory has a certain symmetric beauty and cyclic completeness. Nevertheless, the validity for practical life has been questioned.

[43] Kolb p. 95 et seqq.
[44] Staemmler p. 55, Kolb p. 76.
[45] Reported by Lehmann p. 50 and Staemmler p. 64.
[46] Staemmler p. 70.
[47] Kolb p. 144 et seqq.; Staemmler p. 69 et seqq.

He has evolved a test procedure called “Learning Style Inventory” (LSI) in order to identify a person’s individual learning type. The first versions of this test did not pass a critical review with regard to reliability and scientific validity.[48] Improved versions provided better results in both criteria, but still not all critics are convinced, the controversial discussion of the LSI is still going on.[49]

According to Lehmann, “numerous studies” exist, proving that the learning results (cognitive and skill level) are not influenced significantly by an adaptation of the way information is presented to the individual learning type.[50] The areas where such an adaptation has an effect is the affectional and the motivational level,[51] the students enjoy learning more if the presentation fits with their learning style. Without doubt this is a relevant factor, but the theory of learning types has promised something different, i. e. an improved learning performance.[52] Such an improvement has not been measured, in spite of a higher motivation.

It is also difficult for a teacher to apply his or her knowledge about learning styles effectively if the identification of the learning style of a student is connected with such a difficulty as an unreliable test[53] or unforeseeable personal development.

The classification of learners seems totally impractical if you accept the thought that impulses from the learning environment are fruitful that are not adapted to the pupil’s present learning style, but to the opposite. Thus, a basic development is induced resulting in an extended strategy repertoire and an approximation to the ideal of the balanced learner. [54]

In a sense, the value of the whole theory is thus reduced to a confirmation of the important principle to use different methods of interaction between learners and teachers alternately.[55]

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[48] Staemmler p. 74 et seq.
[49] Staemmler p. 80 et seq.; only a good 60 % accept the LSI completely according to a meta-study by Hickcox in 1991, cf. Lehmann p. 65; Lehmann himself utters doubts as well after having worked with the Kolb theory empirical, p. 169. Greenaway has circumspectly collected criticism on Kolb’s theory from different sources, cf. http://reviewing.co.uk/research/experiential.learning.
[50] Lehmann p. 162, p. 167 et seq.
[51] Lehmann S. 160, p. 162 et seq.
[52] Cf. Willingham, http://www.youtube.com/watch?v= sIv9rz2NTUk.
[53] Sternberg/Grigorenko p. 18.
[54] Lehmann p. 58 et seq.
[55] Cf. Staemmler p. 81.

## 4. Conclusion

The image of a "learning type" in the sense of a personal quality of the pupil is not convincing. Habits ("learning styles") may exist, but they are not primary determinants for teaching, they are merely one condition among others. In his video clip published on YouTube, the American psychologist Daniel Willingham draws the explicit conclusion: "Good teaching is good teaching, and good teachers do not have to adjust their teaching to individual students' learning styles."[56]

This seems to be rather a sweeping statement. Could there be other typologies that meet the demands of pedagogical practice and science to a higher degree? Beneath the two models presented here, there are other concepts of learners and learning styles. As an example I will just give Schrader's categories (grounded on empirical studies in the field of German adult education): "theorist", "practitioner", "model student", "indifferent" and "insecure". [57]

In total, not less than 71 different models of learning styles have been introduced during the past 30 years, as the scientific journalist online platform Physorg notes in December 2009. The result of the reported meta-study is disillusioning:

> But psychological research has not found that people learn differently, at least not in the ways learning-styles proponents claim. Given the lack of scientific evidence, the authors argue that the currently widespread use of learning-style tests and teaching tools is a wasteful use of limited educational resources.[58]

It remains true: It is neither reliable nor fruitful to categorise people.

I even see a danger in labelling a student as a certain learning type. This could produce inner resistance against impulses from the teacher of which he or she "knows" that they do not fit with his or her "type".[59] According to Kolb's theory, this would lead to stagnation in the

[56] Willingham, http://www.youtube.com/watch?v=sIv9rz2NTUk.
[57] Schrader p. 106 et seqq.
[58] http://www.physorg.com/news180202248.html.
[59] Cf. Stangl (2), http://arbeitsblaetter.stangl-taller.at/TEST/HALB/theorie.shtml: „Dennoch ist davon auszugehen, dass durch die von manchen Lernratgebern geförderte **Fixierung auf einen Lerntyp** dem Lernenden Möglichkeiten des effektiven Lernens verschlossen bleiben."

process of extending the range of learning strategies and approaching the status of a balanced learner, thus unfolding the full mental potential.[60]
Perhaps, the word „typology“ does not begin with a ”typo“ by accident...

Still, there is a difference between speculations about “learning types” and the systematizing of learning behaviour. Becker makes a distinction between learner typologies that are not valid from a scientific perspective and learning styles, confirmed by psychological studies on cognitive styles and preferred strategies for solving problems. [61]

It is an advantage to take account of different learning strategies (without limiting an individual to a certain strategy or supporting one in limiting him- or herself). Thus, you guarantee a rich and attractive presentation of the content[62] as well as an opportunity for all participants to extend their repertoire of learning strategies (as Kolb describes it, vid. supr.)

Many authors approve a variety of stimuli for different sensual channels.[63] Nevertheless, it is recommended that the learning environment does not become too complex, as the short term memory of the learner could be overloaded.[64]

In the end, even exponents of learning type theories admit that this perspective is only one among many others.[65] I want to leave the final word of this section to Looß: “In the end, cognitive, volitional and emotional-motivational qualities of character interact in the individual construction of knowledge” [66]

[60] By limitting the modes of learning, vid. supr., Lehmann p. 58 et seqq.
[61] Becker p. 76.
[62] Looß p. 193.
[63] Vester p. 126; Sütterlin, http://www.philognosie.net/index.php/forum/message/901.
[64] Lehmann p. 170.
[65] Sütterlin, http://www.philognosie.net/index.php/forum/message/901.
[66] Looß p. 196 et seq.: „Insgesamt wirken kognitive, volitionale und emotional-motivationale Personenmerkmale bei der individuellen Wissenskonstruktion zusammen.“, transl. S. B.

## 5. Application in singing lessons

It was mentioned in the introduction that in the USA, first approaches to apply the Kolb typology in vocal pedagogy have been made. In this context, Hurst-Wajszczuk writes: "Applying Kolb learning preferences in the applied voice studio is a bit more complicated than in a classroom setting, but is equally useful."[67]

She reports utterances of her students representing certain learning types in their obligatory learning diaries. Divergers (or, as she puts it, "Hearts") wrote something on questions of the song text as well as their feelings during practice, accommodators ("Products") on their successes in learning, assimilators ("Equations") would make little grids occasionally in order to document their practice time.[68] Nothing is said about convergers at this point.
In the lessons itself, types would show in the following patterns of behaviour: Divergers („Hearts") would seek for depth in expression, occupying themselves with the poem or the biographical or historical background. Convergers ("Questioners") would move a lot, the teacher should give them freedom in the design of the lessons and have them combine pieces or even exercises with their own little choreographies. Assimilators ("Equations") seemed to be most interested in physiological or musicological explanations and should be reminded from time to time that the doing is what matters, not the knowledge. Accommodators ("Products") would be keen on getting things done, frequently producing little flaws. Here, Hurst-Wajszczuk recommends to mark little short term aims, e.g. first the precise practice of the rhythm, then the translation of the foreign-language text etc. as intermediate products to cultivate carefulness.[69]

These explanations are predominantly descriptive, and above that, they seem too simple a classification for a group of people with a degree of individualisation as high as is typical in singing students. Additionally, it appears strange to call such people by unpersonal terms like "equations", "products" etc.

By analogy with existing explications of the Kolb learning styles with regard to teaching methods,[70] I tried to systematize possibilities of the application of different strategies in voice

[67] Hurst-Wajszczuk p. 425.
[68] Hurst-Wajszcczuk p. 425, cf. p. 423 et seq.
[69] Hurst-Wajszczuk p. 426.
[70] Lehmann p. 55 et seqq, Staemmler p. 54.

teaching in a prescriptive way. I included modern digital resources of vocal pedagogy. (Additionally, I refer to a taxonomy of teaching methods for one-to-one music lessons by Anselm Ernst.[71] The names of these methods are self-explanatory.)

Concrete Experience:
- Teacher as a model (model method)
- Audio-examples (CD-player) and YouTube-video clips
- Interactive tutorials for theoretical content

Reflective Observation:
- Deductive explanations (e.g. reasons for a certain exercise from voice physiology)
- Archive of literature and recordings
- Audio-recordings of lessons and home practice

Abstract Conceptualisation:
- Theories and reference books
- written tests (applicable in the methodology seminar)
- Case studies
- Instructive method

Active Experimentation:
- Exercise and comment
- Discovering method
- Self-determined learning activity
- Real time visual feedback
- Self-made syntheticized accompaniment for practice purposes

A consideration of learning strategies based on sensual channels (section 2) consists in the use of visualisation potentials in the first place, e.g. graphic presentation of the voice sound through software like VoceVista or Sing&See.

It is true that human beings are involved in the process of singing as a whole. Singing is a mental-physical activity, controlled by kinaesthetic and auditory perceptions and mostly supported by visible mimic and acting performance. Yet, the auditory component is dominating, as we are talking about an acoustical art, and accordingly, this channel is already predominant in singing lessons. Irrespective of a personal preference, it is necessary for all learners in the field of singing to develop and sharpen their sense of hearing.

[71] Ernst, p. 83 et seqq.

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